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International Studies Program
Andrew Young School of Policy Studies
Georgia State University
Atlanta, Georgia 30303
United States of America

Phone: (404) 651-1144
Fax: (404) 651-4449
Email: ispaysps@gsu.edu
Internet: http://isp-aysps.gsu.edu

Georgia State University | ANDREW YOUNG SCHOOL OF POLICY STUDIES

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Designing the Local Government Enhancement Fund for the Philippines

Jorge Martinez-Vazquez

and

Yongzheng Liu [1]

[1] Regents Professor of Economics and Director of International Studies Program, and Research Associate, Inter ational Studies Program, respectively, at the Andrew Young School of Policy Studies, Georgia State University. This report is being written at the request from DILG to ADB for technical assistance in the design of the new fund. We would like to thank Violeta Vulovic for computational assistance. We are also thankful to Raymund Fabre, Norman Ramos and Juan Luis Gomez for general support and guidance. We would like to express appreciation for the insights and guidance of Undersecretary Austere Panadero, Director Manuel Gotis, Director Rolando Acosta, and Assistant Director Anna Liza Bonagua of the Department of the Interior and Local Government; Undersecretary Laura Pascua, Director Carmencita Delantar, and Director Myrna Chua of the Department of Budget and Management; Arnold Tan and Pamela Quizon of the Bureau of Local Government Finance; Monina Camacho of the Union of Local Authorities of the Philippines (ULAP); Veronica Hitosis of the League of Cities of the Philippines (LCP), Alex Villano of the League of Provinces of the Philippines (LPP); Alex Brillantes and Jose Tiu Sonco of the University of the Philippines, Rosario Manasan of the Philippines Institute of Development Studies (PIDS), and Gaudioso Sosmena of the Local Government Development Foundation (LOGODEF). The work in the paper also benefited from the workshop conducted on April 27, 2011 at the Richmonde Hotel in Pasig City where helpful inputs were received from representatives of the National Economic and Development Authority, the Department of Social Welfare and Development, the Department of Agrarian Reform, the Department of Education, and the Congressional Policy and Budget Research Office of the House of Representatives.

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AI	Allocation Index
DILG	Department Of Interior And Local Governments
EOR	Estimated Own Revenues
FC	Fiscal Capacity
FEEP	Fiscal Equity And Expenditure Performance
FG	Fiscal Gap
GDP	Gross Domestic Product
GFS	Government Finance Statistics
GoP	Government Of The Philippines
GRP	Gross Regional Product
IEN	Index Of Expenditure Needs
IMF	International Monetary Fund
IMF-GFS	International Monetary Fund – Government Finance Statistics
IRA	Internal Revenue Allotment
IRC	Index Of Relative Collection
IRFC	Index Of Relative Fiscal Capacity
LENc	Local Expenditure Needs - Cities
LENm	Local Expenditure Needs - Municipalities
LENp	Local Expenditure Needs - Provinces
LGEF	Local Government Enhancement Fund
LGPMS	Local Government Performance Measurement System
LGU	Local Government Units
MDG	Millennium Development Goals
NIRC	National Internal Revenue Code
NTR	National Tax Revenues
NTR	National Total Revenues
OR	Own Revenues
PCF	Performance Challenge Fund
RCR	Relative Collection Ratio
RES	Representative Expenditure System
RRS	Representative Revenue System
SEF	Special Education Fund
SEN	Sub-National Expenditures Needs
SGH	Seal Of Good Housekeeping
TTR	Total Taxable Resources
VAT	Value Added Tax

Executive Summary

The main transfer instrument from the central governments to local government units (LGUs) in the Philippines, the IRA (Internal Revenue Allotment), introduced in 2001, has been criticized for two main failings: its inability to equalize sufficiently, especially regarding the poorer municipalities and provinces, and that its funds have not been spent in an efficient manner. Recently LGU associations have petitioned the Government of the Philippines (GoP) for an expansion in the funding of the IRA from 40 percent of internal revenue collections to 50 percent, and several draft Bills have been prepared.

There appears to be ample consensus that if the additional 10 percent in funding were to take place, these funds should not be distributed following the same methodology used for the IRA and that a new transfer mechanism should be put in place. Two general requirements for the new transfers are often mentioned. First, the distribution of the additional funds would need to have a much stronger equalization effect among LGUs. Second, the recipient LGUs would need to be held accountable to use the funds to improve the performance of public services.

The new transfer so far has been called the "Local Government Enhancement Fund" or LGEF. We propose a more descriptive name for it -- the fund for "Fiscal Equity and Expenditure Performance" or FEEP.

The design of the new transfer with 10 percent additional funding and separate from the IRA will face four major challenges: (1) How to concretely define the origin and computation of the 10 percent additional funding (2) How to apportion the additional funding among the different groups of LGUs (provinces, cities, municipalities, and barangays) (3) What formula to use for the distribution of the additional funds for qualifying LGUs in each particular group of LGUs (4) How to ensure that the additional funds will be used by LGUs to improve their service delivery performance These four challenges are addressed in this paper.

First challenge: Origin and computation of the 10 percent additional funding

Two main options are explored: Using the same base as for the IRA, which is internal revenue collection; or using the broader base of total national revenues, which expands the IRA base to include all collections by the Customs Office and Internal Revenue. Obviously, the 10 percent equivalent increase in funding would be the same under both options. The potentially important difference between these two approaches is how the two bases (internal revenue versus total revenue) will perform in the future, in particular from the viewpoint of their volatility. We find that, although there is some evidence that the broader base (total revenues) exhibits a bit more volatility over time, the differences are not too significant. Therefore, there is not a clear preference for either of the two bases for the FEEP.

Several other (less orthodox) options for obtaining the additional funding are also explored. First, to freeze the funding of the IRA as of 2011, holding harmless all LGUs in the future years to the same funding in absolute numbers that they had in 2011, and utilizing the increases in nominal pesos from the 40 percent formula for the IRA to finance and expand the FEEP. This would mean that the importance of the FEEP vis-à-vis the IRA would increase over the years and it would be an indirect way to reform the IRA. Second, to shift some of the resources currently distributed through the National Government conditional transfers to the FEEP, in particular special funds in the budgets of sectoral agencies (e.g., Agriculture) that may not be used or that are inefficiently utilized. Third, to consider the introduction of negative transfers from better-off LGUs to the FEEP fund. A good number of countries around the world finance their equalization grants fully or partially with what is known ‘fraternal’ systems (also known as Robin Hood systems) of finance that demand transfers from the richer LGUs to compensate the poorer LGUS.

Second challenge: The vertical apportionment of the 10 percent additional funds among provinces, cities, and municipalities

Perhaps the greatest challenge in designing the FEEP is how to apportion the additional funding among the different groups of LGUs (provinces, cities, municipalities, and barangays). In the paper we explore several possibilities. One of the options considered is to modify the current apportionment percentages used in the IRA by excluding the Barangays from the vertical distribution and distributing their share proportionally to what the other subgroups of LGUs have. Currently, the IRA is subject to a vertical distribution formula that provides 23 percent of the funds to provincial governments, 23 percent of the funds to the cities, 34 percent to the municipalities, and 20 percent to the barangays. The proposal would produce shares of 28.75 percent for provinces and cities, and 42.50 percent for municipalities.

We consider a second option with the vertical distribution among provinces, cities and municipalities being proportional to their respective aggregate positive fiscal gaps, where those fiscal gaps are estimated in this paper. The advantage of either approach is that they offer a rationale for the vertical distribution as opposed to some new rule that is again arbitrarily derived. The apportionment percentages under this approach will become approximately 15 percent for provinces, 18 percent for cities, and 67 percent for municipalities.

Fundamentally this second approach is the only sound approach to the derivation of the vertical distribution rule. However in the future "true expenditure needs" of the different subgroups of LGUs would have to be derived; in the paper we use a historical approximation to expenditure needs and there is no reason to expect the two measures of expenditure needs to actually coincide. In the paper we provide and simulate different methodologies to compute the expenditure needs of LGUs

Third challenge: What formula to use for the distribution of the additional funds

This section develops several approaches for distribution of the new available funds among local governments within each subgroup of LGUs. That is, given the funds available separately for provinces, cities, and municipalities, obtained in the previous step, the question then becomes how to distribute among municipalities themselves, etc. There are two main conceptual departures in what is being proposed from what is currently done under the IRA. Under the new distribution rules: First, not all local governments would get funds; that is, a good number of them would get zero. Second, the distribution of funds would be based on the quantification of the "fiscal gap" concept, which is defined as the difference between expenditure needs of a local government and its fiscal capacity to raise revenues.

Before discussing and computing the concepts of fiscal gap, expenditure needs and fiscal capacity, the paper presents a formula to distribute the funds in each subgroup of LGUs that is similar but significantly improves upon the current formula used for the IRA (a weighted index of population, land area, and equal shares). The improved weighted index introduces additional factors to population and land area to better proxy the differences in expenditure needs. These factors include the young and elderly populations and the incidence of poverty. We also introduce an additional factor in the weighted index to account for the differences in fiscal capacity across LGUs. Note that the new improved index eliminates the equal share factor currently used in the IRA. However, under this expanded weighted index approach all LGUs still receive some FEEP transfers. That is not the case with the fiscal gap approach that follows.

The core approach to the distribution of funds within each subgroup of LGUs consists of the estimation of a fiscal gap, defined as the difference between expenditure needs and fiscal capacity, for each LGU. The paper reviews the different methodologies available for the estimation of expenditure needs and fiscal capacity and it implements with data for 2008 two measures for the estimation of expenditure needs and also two measures for the estimation of fiscal capacity.

The simulations of the FEEP transfers are carried out with the different methodologies assuming two different vertical allocation rules (across subgroups of LGUs). The first is a modified IRA allocation rule (excluding Barangays)—and the results are reproduced in the first table below--and the second is in proportion to the aggregate positive fiscal gaps in each subgroup of LGUs (provinces, cities and municipalities) —and the results are reproduced in the second table below. Note that using the fiscal gap approach allows restriction of FEEP transfers only to those LGUs that have a positive fiscal gap (that is, where expenditure needs exceed fiscal capacity).

Per capita FEEP Transfers under Proportional Allocation and Adjusted IRA Vertical Distribution Rule
(for 2008 in PhP)

	Provinces	**Cities**	**Municipalities**
Min	0	0	0
Max	2031.23	4445.48	9068.76
Average	126.42	576.52	315.71
Standard deviation	326.42	1016.61	669.30
Coeff. of variation	2.58	1.76	2.12
Total FEEP transfers (in million PhP)	15,376.74	15,376.74	22,730.83

Source: Own Calculations.

Per capita FEEP Transfers under Proportional Allocation and Share of Aggregate Fiscal Gap Vertical Distribution Rule
(for 2008 in PhP)

	Provinces	**Cities**	**Municipalities**
Min	0	0	0
Max	127.17	3,213.12	16,520.08
Average	7.92	416.70	575.12
Standard deviation	20.44	734.79	1,219.23
Coeff. of variation	2.58	1.76	2.12
Total FEEP transfers (in million PhP)	9,627.18	11,114.03	41,407.54

Source: Own Calculations.

Fourth challenge: Holding LGUs accountable to improve the performance of expenditures

The last section of the paper addresses the issue of how to make sure that the additional FEEP funds will be used by LGUs to improve their service delivery performance. As opposed to using ex-ante conditionality for receiving the additional funds, the paper proposes to use ex-post performance indicators. This approach preserves a higher degree of autonomy of LGUs. The carefully selected performance indicators would need to be measured independently from the LGUs themselves and should be meaningful in mattering in a significant way in the quality of life of LGU residents. The indicators should preferably be service outputs, as opposed to outcomes, given that the local jurisdictions tend to have much less control for service outcomes. Because of very different starting points in most indicators for different LGUs, performance would need to be read as differentiated changes in the selected indicators. Failure to deliver improved performance in the set period, say after 2 or 3 years, would be followed by suspension of half of the available funding. After another round or period of performance, for example three more years, the funding could be completely suspended, with continued failure to improve, or fully restored, with increased performance. Although the paper explores the past experience in the Philippines with performance indicators and the several possibilities there may be available, the actual selection of the performance indicators will require further work in the future.

I. Introduction

The main transfer instrument from the central governments to local government units[2] (LGUs) in the Philippines, the IRA (Internal Revenue Allotment), introduced in 2001, has been criticized for two main failings.[3] The first is its inability to equalize sufficiently, especially regarding the poorer municipalities and provinces, especially vis-à-vis the fiscal standing of many "rich" cities. The second is the feeling that the IRA funds, to a large extent unconditional in their use by LGUs, have not been spent in an efficient manner to improve the daily life of ordinary citizens throughout the national territory.

Recently LGU associations have petitioned the Government of the Philippines (GoP) for an expansion in the funding of the IRA from 40 percent of internal revenue collections to 50 percent. Though there is much less than full agreement on this expansion, the possibility of an expansion in the funding is now being seriously considered by the executive and legislative branches of government.

There appears to be ample consensus within the GoP that if the additional 10 percent in funding were to take place, these funds should not be distributed following the same methodology used for the IRA.[4] Two general requirements for implementing the additional 10 percent funding, on which there appears to be also wide consensus, are often mentioned.[5] The first is that the additional funds would need to have a much stronger equalization effect among LGUs, that is mainly help the relatively poorer ones, than is the case now with[6] the IRA.[7] The second is that

[2] These include provinces, cities, municipalities and barangays. The latter are the equivalent of boroughs. The relationships between the different LGUs and especially those of cities and municipalities with the barangays are examined in several essays in Preschle and Sosmeña (2007).
[3] See DILG (2009) for a recent assessment of the decentralization system in the Philippines.
[4] See Pardo (2005), Brillantes (2005) and Guevara (2006, 2007) for good discussions of the problems associated with the current design of the IRA and proposals for reform.
[5] The draft Bill on the "LGU Enhancement Fund"---not an official name but how it has been referred to—provides that the additional 10% of funds should be allocated according to the two criteria of equity and performance. Some of the available drafts of the Bill include a concrete split of the 10% funds into 5% for equity adjustments and 5% for performance.
[6] Several proposals have been made for reforming the IRA. The most recent is by JICA(2008).
[7] See Manasan and Chaterjee (2003) and World Bank (2010) for the existing and (apparently) growing inequality and lack of economic convergence across geographical regions in the Philippines. A more recent assessment of the impact of decentralization in the Philippines can be found in Brillantes et al. (2010).

there should be a considerable increase in accountability for how the recipient LGUs use the funds to improve the performance of public services.

These two general thrusts, greater equalization outcomes and improved service delivery performance in the use of funds, are widely acknowledged desired goals also for the reform of the IRA. However, at the present time, it does not appear that the reform of the IRA is politically viable.

Thus, the design of the new transfer -- the fund for "Fiscal Equity and Expenditure Performance" or FEEP--[8] for 10 percent additional funding as separate from the IRA will have the advantage of showing some –or most- of the way for how the IRA itself may be reformed at a future date when it becomes more politically feasible. In addition, and as we explore below in more detail, the FEEP can easily become a blueprint for the eventual reform of the IRA, if the IRA overall allocation is frozen in a hold-harmless position for all LGU recipients in a base year, say 2011, and annual nominal increments in the IRA funding are moved to the FEEP.[9]

The design of the FEEP faces four major challenges:

1. How to concretely define the origin and computation of the 10 percent additional funding? In particular, should the base of the funding be internal revenue collections, as in the case of the IRA, or something different? In this regard, one standing request of the associations of LGUs has been to use total central government revenues for the IRA. What are the advantages and disadvantages of the different choices, and are there other alternatives?

[8] The proposals for this initiative have used in the past the title of the " Local Government Enhancement Fund" or LGEF. This report proposes the new more descriptive name of Fiscal Equity and Expenditure Performance Fund or FEEP for the transfers but we keep the LGEF in the title of the paper to avoid confusion.

[9] One issue to take into account may be the proliferation of special funds in the intergovernmental finance system of the Philippines. However, the FEEP will have very different features and objectives than other existing funds. The Special Education Fund (SEF) was introduced in the Local Government Code of 2001 and earmarks the proceeds from an additional 1% tax on real property to support school boards. See Manasan and Castel (2010) for a discussion of issues related to the SEF. The Performance Challenge Fund (PCF) that is being created for LGUs will have considerably smaller funding than the FEEP (P500 million), it will be dedicated to matching high impact capital infrastructure projects, and it will follow a completely different approach to LGU performance. The PCF will confer a "Seal of Good Housekeeping" (SGH) to pre-qualifying local units focusing on the areas of administrative good governance.

2. How to apportion the additional funding among the different groups of LGUs (provinces, cities, municipalities, and barangays)? One possibility would be to use the current apportionment percentages in the IRA. However, there is the widespread perception that the initial arbitrariness of the IRA apportionment percentages is part of the problem (causing the significant and increasing fiscal disparities among groups of LGUs) and therefore hardly could be part of the solution. What other options are available?

3. What formula to use for the distribution of the additional funds for qualifying LGUs in each particular group? Here there seems to be clear the consensus on the need to improve the current formula used for the IRA distributions and based on a weighted index of population, land area, and equal shares. What seems to be also clear is the need for more accurate measurement of the expenditure needs of LGUs (than provided by the population, area and equal shares in the IRA formula), and for the inclusion of some measure of fiscal revenue capacity (currently entirely ignored in the IRA formula).What new formulas and methodologies are feasible given current data availability?

4. How to make sure that the additional funds will be used by LGUs to improve their service delivery performance? As opposed to using ex-ante conditionality for the additional funds (for example, where the money can be spent, what kind of inputs to use, etc.), the goal would be to preserve a high degree of autonomy of LGUs but demand from them ex post, say after 3 years of receiving the additional funds, proof of improved performance in a number of carefully selected indicators. These indicators would need to be measured independently from the LGUs themselves and would have to be meaningful in in a significant way in the quality of life of residents. Because of very different starting points in most indicators for different LGUs, most likely the improvements would need to be read as differentiated changes in those indicators. Failure to deliver improved performance in the set period could be followed by suspension of half of the available funding. After another round or period of performance, for example three more years, the funding could be completely

suspended, with continued failure to improve, or fully restored, with increased performance.

These will be the four main challenges that will be addressed in a separate chapter of this report. The last chapter concludes and summarizes the main policy options open to the GoP.

II. Defining the origin and computation of the 10 percent additional funding

Even though it is far from certain that the additional funding eventually approved for the FEEP will be the equivalent of 10 percent extra on top of the 40 percent now dedicated to the IRA,[10] it will be necessary to make an assumption on that amount to go forward with this study. Therefore, henceforth we will assume that the additional funding will be of 10 additional percentage points.

Having set that issue, the next question is what should be the source of the 10 percent additional funding. From a political-economy perspective it will be important to disassociate as much as possible the FEPP and its funding from the IRA so to mute legalist interpretations that since the increment in funding is based on the IRA, so should be the distribution formula. That is, it will be important to make it clear that the FEEP is not part of the IRA, since it pursues very different objectives s with quite different means. There are several alternatives that can be explored to determine the funding rule for the FEEP:

(a) Using the same base as for the IRA.

A simple answer is to make use of the current arrangement under the IRA and to increase the allotment from the current 40 percent of the IRA to 50 percent. This funding is based on collections from the National Internal Revenue Code (NIRC). Under the Code, the internal revenue taxes-- or taxes collected by the Bureau of Internal Revenue-- include all income taxes, transfer taxes, excise taxes on domestic trade, VAT on domestic trade, other business taxes, documentary stamp tax and other miscellaneous taxes. The advantages of this approach are

[10] In our preliminary meetings other figures were mentioned including, for example, an additional funding of only 5 percent.

several. It is the simplest and it can use the 'machinery' already in place for the distribution of the IRA. It also would preserve certain revenue sources, such as customs revenues and fuel taxes, for the central government. But this approach also presents several disadvantages. It links too directly and explicitly the FEEP with the existing IRA and this can create problems down the road when the formula for the distribution of funds will differ between the two. In addition, it may not be the most responsive to the requests for additional funding from the associations of LGUs which have also been requesting for some time the broadening of the IRA base to all national tax revenues, including customs taxes and taxes on fuel.

(b) Using an expanded base from central government total revenues.

This alternative would use a broader base, specifically all central government revenues—this including customs taxes and fuel taxes, among others— to compute the 10 percent equivalent in additional funding for the FEEP. We can call this base NTR, for national tax revenues. In absolute terms for the base year this would mean the same exact revenues as in alternative (a). Thus rather than adding 10 percentage points to the IRA computation, the same amount of funds would be derived by multiplying national tax revenues (NTR) by some *x* percent. However, over time the absolute amount in pesos could become different if that initial *x* percent is kept and the national revenues (NTR) and internal revenues (NIRC) evolve differently. This approach would have the advantage of partially fulfilling one standing request of the associations of LGUs to use total central government revenues for the IRA. The possible disadvantages would include a potential larger commitment of funds by the central government over time.

(c) Other less conventional approaches to funding.

There are some other variations in the approach to funding that may be at least worth considering as ways to address some existing problems with the IRA.

One possibility would be to freeze the funding of the IRA as of 2011, for example, holding harmless all LGUs in the future years to the same funding in absolute numbers that they had in 2011 and utilizing the increases in nominal pesos from the 40 percent formula for the IRA to finance and expand FEEP. This would mean that the importance of the FEEP vis-à-vis the IRA

would increase over the years. In this way, the FEEP would become a good experiment for signaling the way for the reform of the IRA from outside-in. Since the IRA produces unsatisfactory results in terms of equalization and performance accountability, significant advances in those two fronts could take place with an expanding FEEP.

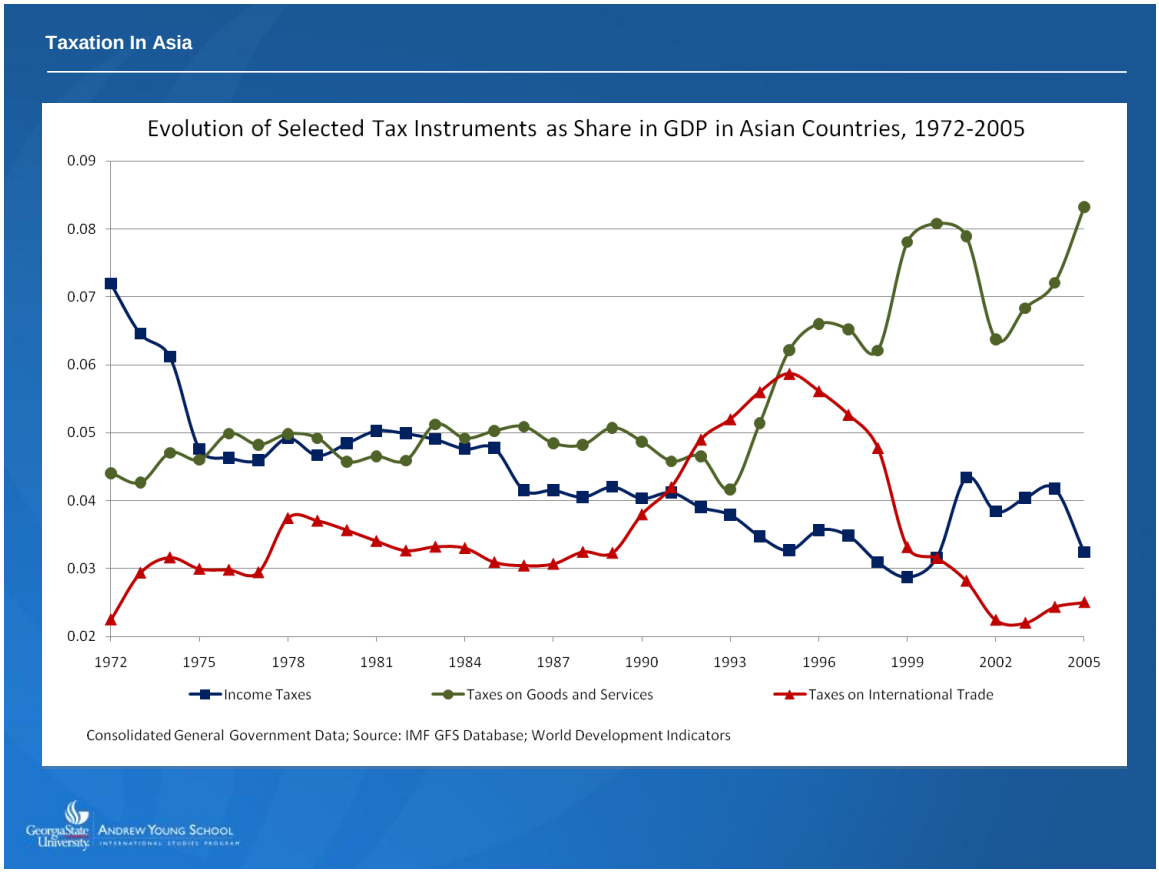
A second possibility would be to shift some of the resources currently distributed through the National Government conditional transfers to the FEEP. In particular, there appear to be special funds in the budgets of sectoral agencies (e.g., Agriculture) that are either unused or inefficiently utilized.

A third possibility would be to consider the introduction of negative transfers from better-off LGUs to the FEEP fund. A good number of countries around the world finance their equalization grants fully or partially with what is known 'fraternal' systems (also known as Robin Hood systems) of finance. Here those LGUs which have a negative fiscal gap (defined as the difference between expenditure needs and fiscal capacity) are required to contribute to a centrally managed equalization fund. In this sense, those LGUs have negative transfers. As explained in Section Four below, there are several methodologies that can be used to estimate fiscal gaps for each LGU. Introducing such a system in the Philippines would have the advantage of further correcting the perceived inequities in the IRA; thus, it would be likely that rich cities and a few other well-off LGUs would have to contribute negative transfers. This approach would have the potential of significantly lowering the fiscal costs to the central government of introducing the FEEP. On the disadvantage side, this approach would pretty much imply the reform of the IRA, for, there is wide consensus, will be politically unviable. The introduction of a fraternal system of finance, being new to the Philippines, may face strong opposition by LGUs that would be potentially losers and end up being too divisive politically.

The two more feasible strategies for funding the FEEP would seem to be either (a) using the same bases as for the IRA or (b) expanding the base to national total revenues. As we have seen, both these approaches offer advantages and disadvantages. In the next paragraphs we look in more detail at the properties of those two bases from a historical perspective. Even though option (b) would include a wider revenue base, since it would include customs revenues and fuel taxes,

it is not clear that it would be superior to the internal revenue base in (a) from all perspectives, such as stability and predictability.

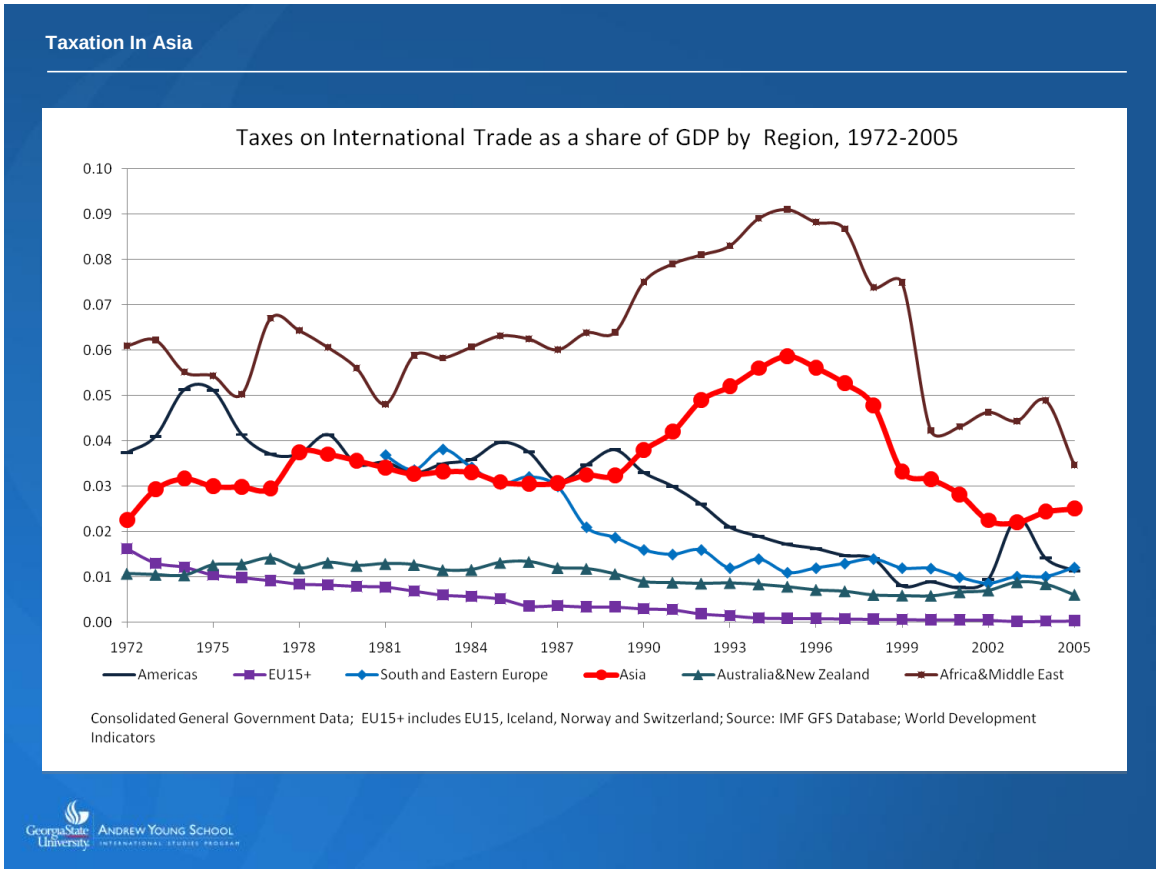
Figure 1



In terms of revenue trends, customs taxes represent a declining revenue source in general because it is quite likely that trade and tariff reforms in the future will continue to lower the level and narrow the dispersion of tariff rates. This trend is illustrated in Figure 1 for a group of Asian countries using IMF data for 1972-2005, where it can be seen that the share of customs taxes (the largest component by far of taxes on international trade) has decreased vis-à-vis the shares of income taxes and taxes on goods and services.[11] The declining relative importance over time of taxes on international trade is not an exclusive phenomenon for Asian countries but can be observed in practically all regions of the world, as shown in Figure 2.

[11] The data are from the IMF-GFS statistics and originally reported in Martinez-Vazquez (2010). Note that the Philippines are not included in the group of Asian countries as the IMF-GFS data source does not carry information for the Philippines.

Figure 2



But offsetting that expected declining trend in customs taxes we need to take into account the increasing trends in other taxes collected at customs, which go well beyond the customs tariff itself. The revenues collected by the Customs Administration include also the VAT and all excises falling on imported commodities, not the least excises on fuel products. Clearly, revenues from these sources (VAT and excises) collected by the Customs Administration can dwarf the revenues coming from the import tariff. It is not infrequent to find in many developing countries that approximately half of VAT revenues are collected by customs offices. And for excises, that share can be even higher. As can be seen in Figure 1, the trend in Asian countries is for taxes on goods and services to continue to increase their share in total tax revenues at the expense of customs taxes and also income taxes.

The next question is, however, whether expanding the revenue base of the FEEP to national total revenues would expose recipient LGUs to greater volatility and unpredictability than in the case in which the internal revenue base were used. The issues of volatility and predictability, not only

the total pool of resources, were in the minds of the designers of the IRA since the funds actually distributed in any one year correspond to the internal revenue collections of the years back.

Table 1. Philippines: Variation in Total Central Government Revenues and Selected Tax Revenues, 1990-2007

	Standard Deviation	Mean	Coefficient of Variation	Minimum	Maximum
Total Revenue	1.5	16.5	0.09	14.4	19.1
Personal Income Tax	0.4	2.2	0.20	1.5	3.4
Corporate Income Tax	0.4	2.6	0.16	1.8	3.6
General Sales Tax	0.2	1.8	0.13	1.5	2.3
Excise Duties	0.6	2.5	0.24	1.5	3.4
Customs Duties	1.0	3.6	0.29	2.4	5.2

Source: Author's calculations based on the IMF GFS Data

Some components of the revenues collected by the Customs Administration, such as for example, excise tax on fuels, can exhibit greater volatility than internal or domestically collected taxes. This is the question examined in Table 1 and illustrated in Figures 3-A and 3-B. While Figure 3-A uses data from the International Monetary Fund, Government Finance Statistics (GFS), Figure 3-B uses from the Department of Finance; note that the breakdowns of the revenue components are different in the two data bases and that in the case of the Department of Finance, we have data through 2009 (as opposed to 2007 for the GFS data). We can see that the two measures of dispersion, the Standard Deviation and the Coefficient of Variation, for annual revenue flows of individual revenue components for the period 1990-2007 are the largest for Customs Duties. Even though, the Standard Deviation for Total Revenue is higher, once normalized by the Mean Value, the Coefficient of Variation for Total Revenue is quite smaller than the one of Customs Duties. Since the revenues from Customs Duties are likely highly correlated with the General Sales Tax and Excise Duties collected at Customs, we could infer that those revenues would also exhibit more volatility than "internal revenues," including the revenues from the General Sales Tax and Excise Duties collected by the Internal Revenue Department. For the petroleum tax a separate time series is not available. However, a large part of this tax is collected upon importation and its revenues (and volatility) and incorporated in the Excise Duties collected at Customs.

Figure 3-A

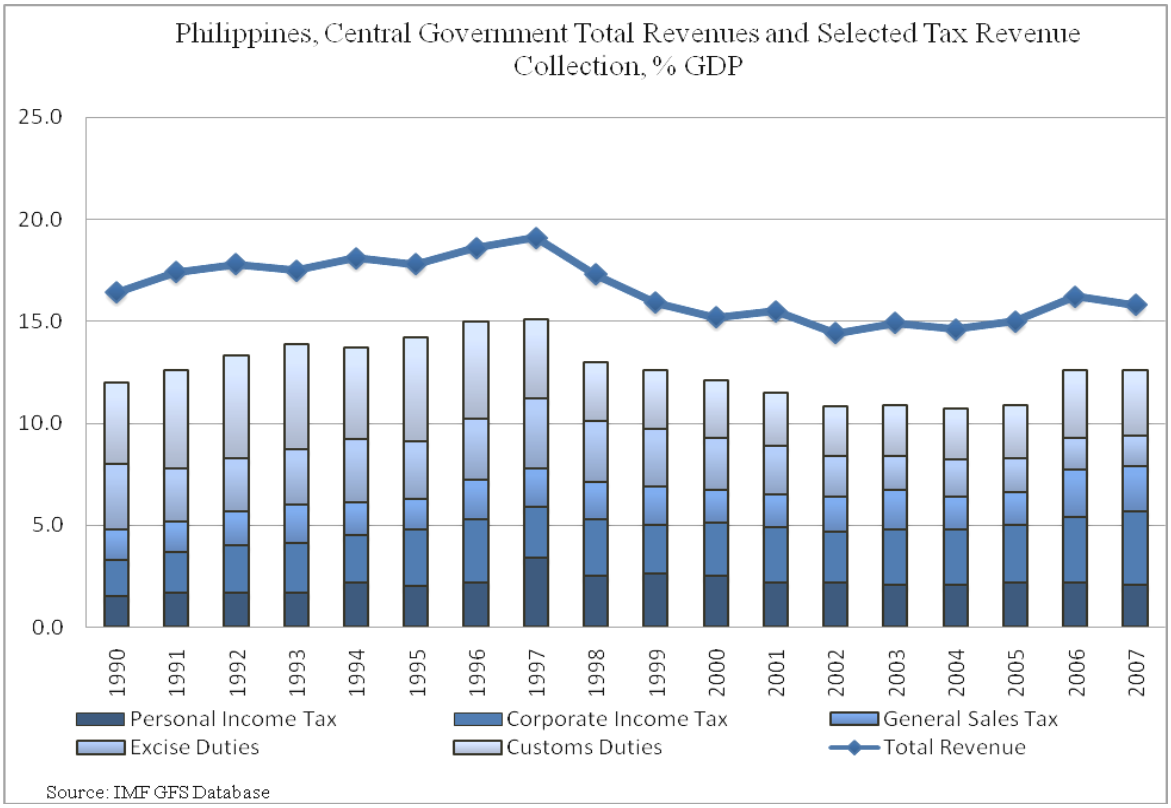
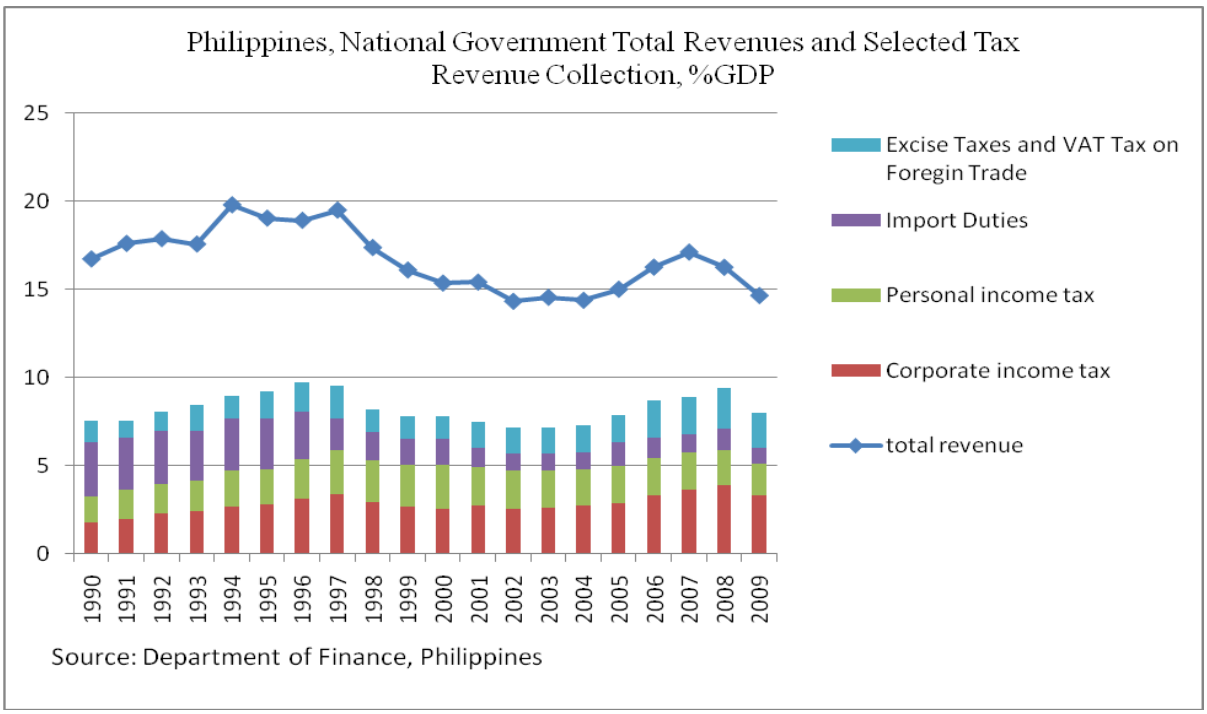
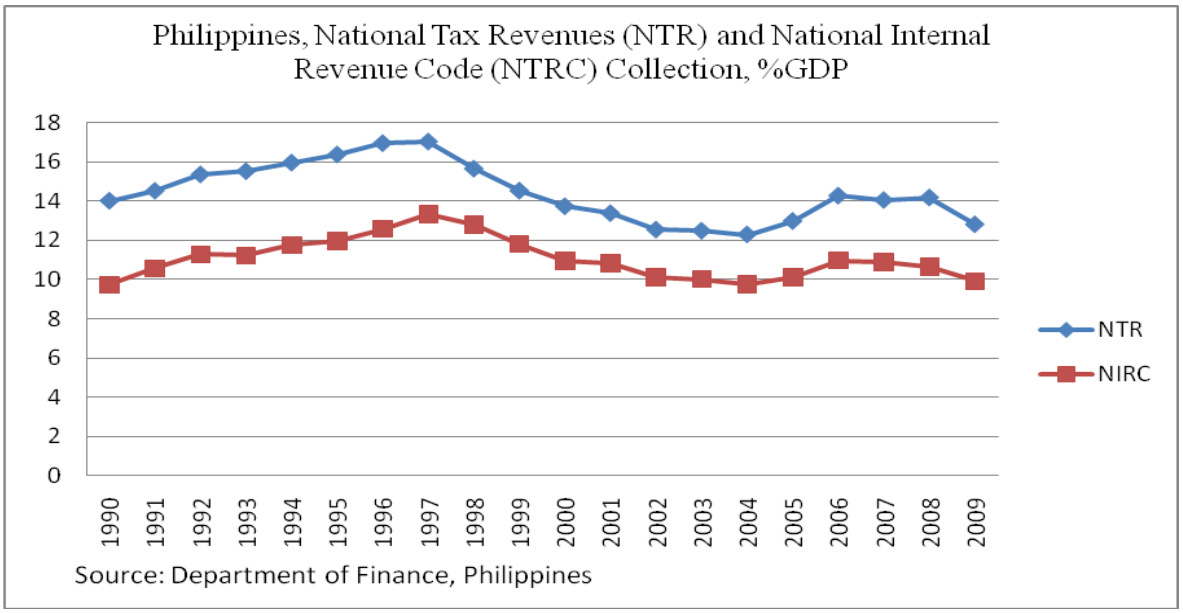


Figure 3-B



In Figure 4 we show the time evolution of the two possible bases, Internal Revenues (NIRC) versus Total Revenues (NTR). We can see that, independently of the total amounts, largely the two series follow each other quite closely. The coefficient of variation for NTR is 0.103 and for NIRC 0.092. Therefore, expanding the computation base for the FEEP to total national revenues (from internal revenues used now for the IRA) will only slightly increase the overall volatility of this transfer with some increased uncertainty and unpredictability for the recipient LGUs. This additional factor should be taken into account in deciding the computational base of the FEEP.

Figure 4



III. Apportioning the additional funding among the different groups of LGUs (provinces, cities, municipalities, and barangays)

In this section we want to address the vertical distribution of the FEEP among the four groups of LGUs. To inform the discussion we will first review the vertical distribution formula for the IRA. Next, we will discuss how different the vertical distribution of the FEEP should be and the difficulties for arriving at a concrete answer.

Currently, the IRA is subject to a vertical distribution formula that provides 23 percent of the funds to provincial governments, 23 percent of the funds to the cities, 34 percent to the

municipalities, and 20 percent to the barangays. This vertical distribution formula of the IRA appears to have been the product of political compromise at the time of the law's approval in parliament as opposed to any calculated weighing of the expenditure needs and fiscal capacity of the different groups of LGUs.

Of course, the choice of vertical distribution shares for the IRA has had important consequences on the overall performance of that transfer. In particular, there is a widely shared perception that the share of the overall funds assigned to municipalities has been insufficient and has caused many municipalities to operate with grave fiscal conditions. The perception is also that something similar, although probably not of the same intensity, can be said for the provinces, many of which seem to be operating with significant difficulties too. On the contrary, it seems like cities, and in particular the bigger and richer cities, have been enjoying funds beyond their needs, even though there are smaller and relatively poorer cities that are not so well off. For the barangays the general perception is that there are no alarming issues of financing and that overall they are doing better than fine with the IRA.

We must note that the relative poor position of LGUs within each group reflects the fact that the current IRA horizontal distribution formula may not capture well the expenditure needs of the units and also the fact that it does not capture at all differences in tax or revenue capacity of the units. However, what we are referring to in this section is to the fact that the current percent shares would not seem to reflect the overall aggregate differences in expenditure needs and fiscal capacity. As a result there appear to be many more municipalities and provinces in dire needs that there are cities.[12]

Unfortunately, the statements above are conjectures based on field observations of different stakeholders of the decentralization system in the Philippines as opposed to the results of hard calculations. Even if there seems to be ample consensus on the empirical validity of those conjectures, they are not more than that, conjectures.

[12] And this does not mean that there are not cities in dire need. In fact many small cities appear also to have significant fiscal difficulties.

This is significant for the vertical allocation of the FEEP because without hard evidence on expenditure needs and fiscal capacity of the different LGUs we lack sound basis to recommend any specific vertical allocation rule.

At this stage, there are two alternative ways to proceed. One approach, which we could call one of 'rough justice' would be to vertically allocate the FEEP only among those groups of LGUs that seem to be in more dire fiscal situations: the municipalities and the provinces. Then, some rule would need to be found to divide the FEEP between those two groups; for example two-thirds for municipalities and one-third for the provinces, or 50-50, or something else. Again we lack sound bases to propose a specific cut. The advantage of this approach would be its simplicity and ease of applications. As disadvantages, it may be politically too divisive as there are relatively poor and smaller cities that would be left out of the additional funds. Also barangays may strongly object when the entire group is left out of any additional financing.

A second approach would be to devise transparent methodologies for estimating the differences between expenditure needs and fiscal capacity (or fiscal gaps) for LGUs in each group. A couple of such approaches are proposed in the next section of this report where we discuss the horizontal distribution of the FEEP. Obtaining a fiscal gap for each unit allows us to aggregate all the positive gaps (that is for those units for which the estimates of expenditure need exceed the estimate of fiscal capacity) in each group. Thus, in theory it would seem like one could use those aggregate estimates to redo the vertical distribution formula of the FEEP and possibly of the IRA, sometime in the future). However, as we will see in the next section of the report, at this stage the estimates of expenditure needs and fiscal capacity will be conditional to the level of resources available to each group of LGUs as a whole. This means that the estimates of fiscal gaps we will be obtaining are not independent of the existing vertical distribution formula for the IRA. Nevertheless, we expect that the information we will obtain from the computation of the fiscal gaps for the units in each sub-group could be helpful in deciding on the direction for the desirable reform of the vertical distribution formula of the IRA, and therefore for its application to the FEEP. In the future, using the methodologies introduced in this paper, it will be possible to develop estimates of the fiscal gap that are independent of the IRA distribution formula. That

will require making normative decisions about standard expenditure needs, which are only the prerogative of the Government.

IV. Alternative formula for the distribution of the additional funds to qualifying LGUs

The horizontal distribution formula for the IRA uses a weighted index approach with three variables: population, land area, and equal sharing. In the case of provinces, cities and municipalities the weights are 50 percent for population, 25 percent for land area and 25 percent for equal sharing. For the case of barangays, only two variables are used: population with a weight of 60 percent and equal sharing with a weight of 40 percent.

Quite clearly the overall intent of the IRA is to work as a general allocation transfer to address a supposedly large vertical imbalance for LGUs regarding their expenditure obligations and autonomous revenue sources.[13] In this sense, the IRA would appear to have performed satisfactorily, even when there is not a good measure of expenditure needs by the different groups of LGUs, and therefore a good measure of vertical imbalance.

Where there also appears to be considerable consensus is that the IRA has been defective in addressing horizontal imbalances in expenditure needs and fiscal capacities both across groups of LGUs (provinces, cities, municipalities and barangays) and within each of these groups.

A priori, the reasons for this failure to address horizontal imbalances are rather apparent.

Across groups of LGUs, the vertical share allocation, as we saw in the previous section, did not take into account either aggregate expenditure needs or aggregate fiscal capacity of each group.

Within each group, the IRA horizontal allocation formula only partially takes into account the expenditure needs of each unit within the group and completely ignores the fiscal capacity issue. In particular, and leaving the choice of weights aside, the population and land area variables are

[13] The vertical fiscal imbalance refers to the difference in fiscal gaps (expenditure needs minus fiscal capacity) between the central government and the aggregate of sub-national governments. Usually the central government has a negative fiscal gap (potential revenue exceeds expenditure need). The sub-national governments have a positive gap (with expenditure needs exceeding their own revenue capacity). The vertical imbalance is thus closed by using transfers from the central to sub-national governments.

likely able to capture differences in expenditure needs but not all the relevant differences. For example, different population groups, such as the very young, the elderly or the poor imply different needs than the regular adult population. There may also be differences in the unit costs for the delivery of different services because of geography (mountain, isolated islands, etc.) or population density or proximity conditions.

In addition the equal sharing is less likely to reflect expenditure need differences. The use of this variable in the formula may be justified because of the fixed costs of operating a government unit given that smaller units are not able to capture economies of scale in the operation of services. However, this type of variable tends to benefit smaller units in an exaggerated way, especially when the weight attached to this variable is relatively large, and at the same time tends to provide a perverse incentive against jurisdictional consolidation if not a further incentive toward further jurisdictional fragmentation.

Perhaps because of those reasons explained above, the IRA has failed to equalize enough within each group of LGUs. That is, there is also a generalized perception that even in the group that appears to be best off, the cities, there are units that are struggling to meet their demands for services (smaller and more geographically distant cities), while there are other units (large cities) that would seem to be much better off and with very substantial reserves of funds that even overwhelm in size any IRA allocations.

Therefore, it would seem to be clear that if the FEEP is to achieve greater equity across LGUs, the current IRA horizontal distribution formula cannot be used for the allocation of its additional funds.

To advance in the direction of a more equitable distribution of funds there is a need to meet two main requirements: first, an improved measurement or approximation to the expenditure needs of each LGU; second, the incorporation of some measurement (or approximation) of the fiscal capacity of each LGU.

The theory and best international practices in the design of equalization grants should be of help if defining those two elements, expenditure needs and fiscal capacity, in the design of the horizontal distribution formula for the FEEP. Therefore, in the following paragraphs we will review the different options available for quantifying expenditure needs and fiscal capacity and how those measures may be put together into a formula. Finally in this section, we will present some preliminary numerical simulations using available data to quantify expenditure needs and fiscal capacity and for implementing the several options of the FEEP horizontal distribution formula.

But before we discuss the approaches to measuring expenditure needs and fiscal capacity to compute the fiscal gap for each local unit, we discuss a minimum first approach which is basically a weighted index approach.

Simpler approach--Expanding the weighted index formula in the IRA

This is the approach currently used for the IRA. The difference will be that in the proposed approach we will include an additional variable for better approximating expenditure needs and we will also include as an additional variable which is a proxy for fiscal capacity. However, it must be noted that this approach falls short of computing a fiscal gap for each local unit and therefore it will not do more than just distributing the pool of available funds by formula. But yes, the distribution of funds will be more equalizing because it does take into account differences in fiscal capacity and it provides better bases to approximate expenditure needs. Even though we will present only one index formula applicable to the three subgroups of LGUs *(Provinces, Cities, and Municipalities)*, conceivably a separate index could be used for each subgroup. This is so because the factors included in the index try to approximate the fundamentals behind expenditure needs for each subgroup. Since the expenditure responsibilities and therefore the expenditure needs of each subgroup can differ, the factors capturing those needs could also differ.

The extended index approach could look like follows: [14]

$$AI_i = \lambda_1(Pop_i/\Sigma Pop_i) + \lambda_2(Area_i/\Sigma Area_i) + \lambda_3\,(YoungPop_i/\Sigma YoungPop_i)$$

$$+ \lambda_4\,(OldPop_i/\Sigma OldPop_i) + \lambda_5(PovPop_i/\Sigma PovPop_i) + \lambda_6\,(RFC_i)$$

Actual FEEP transfer to local unit i = $FEEP_i$ = AI_i x Total pool of funds available for the FEEP transfer in each subgroup of LGUs (Provinces, Cities, and Municipalities)[15]

where,

AI_i : allocation index (or participation share in the pool of funds, in percentage terms) for jurisdiction i in the total pool available for transfers for each subgroup

$Pop_i/\Sigma Pop_i$: share of population for jurisdiction i in the total population computed for each subgroup *Provinces, Cities, and Municipalities*)

$Area_i/\Sigma Area_i$: share of urban area for jurisdiction i in the total area for each subgroup *Provinces, Cities, and Municipalities*)

$YoungPop_i/\Sigma YoungPop_i$: share of population under 5 years of age for jurisdiction i in the total population computed for each subgroup *Provinces, Cities, and Municipalities*)

$OldPop_i/\Sigma OldPop_i$: share of population over 65 years of age for jurisdiction i in the total population computed for each subgroup *Provinces, Cities, and Municipalities*)

$PovPop_i/\Sigma PovPop_i$: share of population living in poverty for jurisdiction i in the total population computed for each subgroup *Provinces, Cities, and Municipalities*)

RFC_i *(Relative Fiscal Capacity$_i$)* = [Max FC - FC_i] / Σ [Max FC – Average FC]

[14] It should be clear that the contribution here is the proposition of an expanded index formula that is more all-encompassing of expenditure needs and fiscal capacity. The actual additional factors included should be treated at this stage more like an example of what can be done than a firm proposal of how a final index formula would look. Other factors may be included as relevant and for which we can obtain objective reliable data. One set of factors not captured in the index formula but which may be quite relevant are those measuring cost differences across jurisdictions in the provision of public services.

[15] As mentioned, the barangays are not included in the discussion. However if they were to be included, the expanded formula here could be adapted to the information available for barangays, as is now the case in the IRA transfer.

Where 'Fiscal Capacity' is being measured as indicated in the next sub-section of the report, and where

$\lambda_{1 \ldots\ldots} \lambda_6$: relative weights for each of the factors in the formula

$\lambda 1 + \lambda_2 + \lambda_{3+} \lambda_4 + \lambda_{5+} \lambda_6 = 1$, and

$\Sigma AI_i = 1$

Two sets of decisions are important to make this approach operational. First, we need to decide what the proper values of the weights are for each of the factors in the formula. Second we need to decide how the pool of available funds for the FEEP will be divided among the subgroups of t LGUs. And unfortunately, there are no clear exact objective criteria that can guide us through either of these choices.

The selection of the weight factors ($\lambda_{1,}$ $\lambda_{2,}$ etc.) involves both technical and inescapably political-judgmental elements. Expert technical analysis within the Philippines from those that intimately know LGU budgets must be used to gauge the relative importance of population, land area, and so on in the determination of expenditure needs.[16] Note that the factors approximating expenditure needs are those from 1 to 5.[17] In the same manner, technical expertise should be used in assessing the impact of fiscal capacity in the relative position (truly, the fiscal gap) for the different LGUs. This is approximated with factor 6. And naturally the stronger weight we give to fiscal capacity the smaller the aggregate weight we will give to expenditure needs. This follows clearly from the condition that $\lambda 1 + \lambda_2 + \lambda_{3+} \lambda_4 + \lambda_{5+} \lambda_6 = 1$and so that $\lambda_{6=} 1- (\lambda_1 + \lambda_2 + \lambda_{3+} \lambda_4 + \lambda_5)$.

[16] See Appendix 1 for a discussion of the potential rationales behind the weight factors.

[17] Of course, other factors could be included and even some could be excluded. Here we are just using best judgment based on international practice and what are the current data constraints. The variable measuring relative poverty $PovPop_i/\Sigma PovPop_i$ is taken here to approximate certain forms of expenditure needs. However, this variable could also be taken to capture some elements of fiscal capacity, but this is not being done here. Fiscal capacity is being measured independently through the RFC variable.

For the purpose of the numerical simulations here we will assume the following values for the weights, but obviously these values are subject to revision and sensitivity analysis:

$\lambda 1 = 0.35$

$\lambda_2 = 0.10$

$\lambda_3 = 0.10$

$\lambda_4 = 0.10$

$\lambda_5 = 0.10$

$\lambda_6 = 0.25$

Regarding the partition of the available FEEP funds among the different subgroups of LGUs, there is no clear objective way to do it without computing fiscal gaps for the local units. At this stage there are several options that are available: (a) use the same vertical apportionment as in the IRA; (b) exclude the barangays and divide the available funds between the other three subgroups, and here the options are multiple of course; (c) exclude also the cities as a subgroup and use the FEEP funds only for the subgroups of LGUs that are widely acknowledged to be in most need; but again the options on how to apportion the funds among the provinces and municipalities are many. Of course, the consequences of selecting one vertical apportionment rule or another are of much consequence. Here, and just for illustration purposes, we will assume that the rule applied is (b) and where we just apportion the 20 percent of the barangays in the IRA proportionally (as in the IRA) to the other three subgroups so that we end up with 28.75 percent of the funds going to the provinces, 28.75 percent of the funds going to the cities, and 42.50 percent of the funds going to the municipalities.

Using the most recent data available for 2008, the summary statistics for the FEEP transfers to three subgroups of LGUs are shown in Table 2, where we use the adjusted weighted index formula for the horizontal distribution within each group and the adjusted IRA vertical distribution, as discussed above to apportion the available funds between the three subgroups. For the pool of FEEP funds to be distributed (in 2008) we use the figure of PhP 53,484.3 million

for an IRA pool of funds PhP 213,937.2 million. An example of the necessary computations is shown in Appendix 4 for the case of (some) provinces.[18]

Table 2. Per capita FEEP Transfers under Adjusted Weighted Index Horizontal Distribution Formula and Adjusted IRA Vertical Distribution Rule (simulated for 2008 and in PhP)

	Provinces	Cities	Municipalities
Min	140.21	258.26	219.75
Max	704.98	1,179.76	19,507.67
Average	288.94	648.14	540.07
Standard deviation	117.22	235.74	579.02
Coeff. of variation	0.41	0.36	1.07
Total FEEP transfers (in million PhP)	15,376.74	15,376. 74	22,730.83

Source: Own Calculations.

Distributing the FEEP funds on the basis of estimated fiscal gaps of LGUs

What we propose in this section is a different approach which represents a significant departure from the index approach used in the IRA. This alternative approach is based on the estimation for each LGU of a fiscal gap as the difference between its expenditure needs (arising from the current assignment of expenditure responsibilities) and its fiscal capacity (based on own revenues and also all received transfers and revenue sharing).

$$Fiscal\ Gap_i = Expenditure\ Needs_i - Fiscal\ Capacity_i$$

The definition and computation of *Expenditure Need*s and *Fiscal Capacity* is addressed immediately below, but before we get into those details we will review first how the *Fiscal Gap* measures will be used. Note that Fiscal Capacity will be measuring all the "Potential Available Resources" to the local unit other than the specific transfer we are trying to determine or

[18] Note that the maximum value for the municipalities is an outlier due to the current data for Kalayaan municipality, which belongs to the province of Palawan (Region IV-B). This municipality, which appears to be a tourist resort, is reported to have a population of 53 but relatively large revenues and expenditures.

distribute, so it will include the "Own Fiscal Capacity" coming from own taxes and fees and include as well any shared revenues and all transfers, including the IRA.

Definition and uses of the fiscal gap.

First, the expression for the *Fiscal Gap* needs to be estimated for each LGU in each of the three groups of LGUs: *Provinces, Cities, and Municipalities.*

For every local unit (within each subgroup) that does not have a positive fiscal gap ($FG_i < 0$), we set $FG_i = 0$.

In this form we will be able to define an aggregate fiscal gap for each subgroup

Σ Fiscal Gap_i for (*Provinces, Cities, and Municipalities)*

It is important to note that we are estimating an aggregate fiscal gap for each subgroup and that even though they all are measured in PhP, the aggregates for the subgroups are not necessarily comparable because the processes used to estimate expenditure needs and fiscal capacity are conditional on the existing data and the averages for each group. What this means is that necessarily there would be some LGUs in each subgroup with positive fiscal gaps, thus indicating a need for additional financing, when it may be possible that in some normative absolute terms all or most LGUs in one subgroup can be in better financial positions than all or most LGUs in another subgroup. As we will see, the methodologies discussed below can provide the basis for those normative comparisons, but clearly, this report will not introduce any normative absolute standards for LGUs.

Nevertheless the aggregate fiscal gap for each subgroup of LGUs will tell a story about the number of LGUs in each group that appear to be in a deficit (or positive fiscal gap) situation and what this total amount is. So, in principle those aggregate amounts can help to inform changes in the apportionment of the available funds in the FEEP across provinces, cities, and municipalities.

Using the fiscal gap as a distribution formula.

In addition (or alternatively) the aggregate fiscal gap for each subgroup can be used to distribute the funds from the FEEP if we are willing to accept a vertical distribution of these funds as used currently in the IRA or other vertical apportionments discussed in the previous section. To see how this would work, we would proceed in two steps for each subgroup of LGUs:

(a) Define Relative Fiscal Gap

The relative fiscal gap is the relative size of each locality's fiscal gap as a share of the aggregate fiscal gaps of all localities:

Relative Fiscal Gap$_i$ = Fiscal Gap $_i$ / Σ Fiscal Gap $_j$

(b) Assign Equalization Transfer

Define the equalization transfer to local government *i* as:

FEEP Transfer to Locality $_i$ = Relative Fiscal Gap $_i$ * Part of FEEP funds for the subgroup of LGUs.[19]

Notice that differently from the extended index approach discussed above, using the fiscal gap approach will not produce a FEEP transfer for each local unit in the group. Instead, only those local units with a positive fiscal gap would be a recipient of the FEEP funds. This will have the obvious advantage of being more equalizing since only those units that cannot cover their expenditure needs with the available resources would get the grant.

For illustration purposes we will assume that the vertical distribution rule for the FEEP is the same as the one used above to illustrate the working of the extended index approach, so that 28.75 percent of the FEEP funds go to the provinces, 28.75 percent go to the cities, and 42.50 percent go to the municipalities. These simulations are shown further down after the review and application of the methodologies to compute expenditure needs and fiscal capacity.

[19] Instead of a proportional approach, we could use a *minimax* approach to the final allocation of transfers. With this approach we should imagine local units in each subgroup sorted in ascending order by the size of their fiscal disparities. The idea would be to start "from the bottom", allocating transfers first to those local units with the largest fiscal gap and then moving up the ranks. We would exhaust the pool of available FEEP funds so that the last local unit receiving the grant funds would report a fiscal gap exactly equal to all those below. Note that not all those local units with a positive fiscal gap may receive funds under this approach to apportioning the available funds.

Measuring expenditure needs and fiscal capacity.

In practice there are a handful of methods that can be used to estimate expenditure needs. Something similar holds for fiscal capacity. These methods used in the international practice are summarized in Appendix 1 and Appendix 2, respectively. Here we will discuss and attempt to apply two of each

Approaches to estimating expenditure needs

Below we review two possible approaches to estimate the expenditure needs of LGUs.

Estimation of expenditure needs using per client expenditure norms (EN1)

The essence of this methodology is to determine for each significant functional service of the LGU a financial standard or norm per client or user of the service (for example, if the local government were responsible for elementary education, how many PhP per year would be allocated for each elementary school student in the Philippines; this amount could be adjusted up or down with a cost index for delivering this service).[20] This is essentially informed by practice but also normative budgeting approach in which the authorities establishing budget priorities determine how much is desirable and affordable to spend on different services. As budget priorities change over time so would the per client expenditure norms for different services. The apparent problem is that no one has stated what these financial per client norms should be for any service in the Philippines. However, the actual historical data, for example, the actual executed budgets of last year contain all the necessary data to compute the implicit per-client financial norms (following the same example, the (implicit) budget norm for elementary education can be obtained as the total sum spent on elementary education by all local governments in the country divided by the total number of elementary school children in the country. Note that expenditure norm is common to all local units (in the absence of variations in

[20] This determination of the per-client expenditure norm can be done top-down and bottom-up. As discussed in Appendix 2, a bottom-up methodology relies on the costing of the different elements of the service related to some physical standards. This approach requires a lot of time and economic effort to put together and it risks arriving at per user/client standards that are essentially unaffordable. What we proceed to discuss and illustrate is a bottom-down approach.

cost provision).[21] Once the methodology gets established using historical budget data, as we will do here, the budget norms can be changed in every budget period.

The concept of potential users or clients deserves special attention: by users or clients we mean all possible recipients of the services provided by a municipal government, which do not necessarily correspond to the total population but could also represent a specific segment, such as the elderly, students, the population of a particular geographic area, etc. Additionally, it is important to distinguish between the *potential* users and those actually benefiting from the services, since the last group might exclude eligible users due to, for instance, budgetary limitations. Expenditure needs must be computed taking into account all eligible inhabitants (still using our elementary education example, this means that the potential users include all children of elementary school age, whether or not enrolled).

The practical steps are as follow:

Step 1: Determination of the expenditure aggregates or envelopes for each local unit function.

The application of this methodology requires the classification of municipal expenditures in terms of the functions or services that the law has defined as a responsibility of local government units, as well as demographic information to identify the amount of users from each of these services.

The methodology of expenditure norms by client requires establishing the total amount of resources actually spent (and in future years what the central government will determine) for each local service or function. In order to make the procedure even simpler, it is possible to group those functions with common users, or alternatively, to choose only the most important ones, while the number of users for the remaining functions is assumed to be equal to the

[21] This methodology and others that are used to estimate expenditure needs are budget preparation tools. In terms of budget execution, the client-based expenditure norm may have a prescriptive character, forcing local governments to spend according to the established norm, or it may just be optional, in which case the local governments are allowed to decide a different amount of expenditure per client. The international practice on this is varied.

population. Using historical expenditure data has the advantage of being feasible, because it is based on effective expenditures incurred in the provision of local services in the country.[22]

The budget data for 2008 identify nine functional categories of local public expenditure: 1) general public service 2) education, culture and sports 3) health, nutrition and population control 4) labor and employment 5) housing and community development 6) social security/social service and welfare 7) economic services 8) debt servicing, and 9) other purposes. The estimation of expenditure needs under the per-client expenditure norms methodology requires the calculation of the numbers of the clients for each of the above categories of expenditures.

Local expenditure on general public service cannot be assigned to a particular demographic group. Instead, this function benefits the community as a whole. We therefore define the total population in the locality as the client base for this service. For similar reasons, we assume economic service, debt servicing, and other expenditures are also spread among the whole population of the locality.

In the case of education, culture and sports, local governments are generally responsible for the provision of public school servicing, which include public kindergarten, primary schools and high schools. Therefore, we define a range of population between ages 4-17 years as the number of potential clients for education services. On the services of culture and sport, we assume in our analysis that the users of these services are concentrated in the adult population before retirement, which covers the range between 18-65. In sum, we consider a range of 4-65 as the potential client numbers for this expenditure category.

The benefits of local expenditure in the area of health, nutrition and population control are mainly limited to some specific groups, such as children, the elderly. However, services are sometimes also provided to a more broad population. To capture this, we define a weighted population, with double weights for population under 5 years of age and over 65 year of age and

[22] If the potential users are more than those historically benefited, the historical expenditure starting point could become an unfeasible standard.

a single weight for the rest of the population (4-65), as the potential client numbers of this expenditure category.

Services for labor and employment are clearly oriented to the adult population before retirement, so we estimate the number of potential clients as the number of population with ages between 18 and 65.

The expenditure on housing and community development include services such as water supply and sanitation, public lighting, natural gas infrastructure, and other communal services. In general, most of these public services benefit entire families, especially poor families, rather than a particular age or demographic group. Therefore, we use the number of poor households as an indicator of need and develop our expenditure norm for housing and community development services on that basis.[23]

Social security/social service and welfare is probably the expenditure function for which the client base is more difficult to define. Services in this category are oriented to the assistance of very specific groups, including the elderly, the handicapped and also children from troubled social environments. Payments are sometimes also expensed to the unemployed and widowers. At this time, due to limited data availability, we are unable to explicitly account for the different client groups or their intensity of use of these services. Therefore, we will assume the elderly is the most important group among the beneficiaries of social security, and use the number of inhabitants over 65 years old as the potential client base for these services.

Let us note that it would be impractical and even misleading to try to define a per-client norm for every single category of local expenditures. A large number of expenditure standards would reduce transparency in the system and enhance the likelihood of complex discussions about the proper client bases. In general, under "other expenditures" we find that some functions are unimportant in budgetary terms, as well as a varied combination of beneficiaries, so the local population is again the best option to estimate the number of clients.

[23] Poverty data for provinces are available for year 2009. However, these data are only available for year 2003 for cities and municipalities. In the simulation analysis, we rely on the data we have.

Step 2: Computation of per-client expenditure norm for each local function.

Here the expenditure aggregate (at the national level—covering all local units) for each function is divided by the number of potential clients (also at the national level) of the services being delivered. This needs to be done for each of the functional areas, covering the entire budget of the local units. Naturally, the difficulty of this step lies in the identification of potential clients for each service. For example, for education, the client base is logically school-age population. For health, a client base can be built that overweighs the very young and elderly populations. For social services for the poor the client base would be population living in poverty. And so on. The entire population can be used as the default client base for those functions that cannot be allocated to particular groups. It must be noted that the criteria opted for in the estimation of the number of clients per expenditure category, although well aligned with current international practice, are of course subject to improvements and intended to serve as mere examples of how the per client expenditure norms should ideally be designed. In general, it is crucial to have well defined expenditure responsibilities[24]

Step 3: Computation of expenditure needs for each function in each local unit.

Quite simply, this can be obtained by multiplying the per-client expenditure norm for each local function by the client base for that function in the local unit.

Step 4: Computation of the total expenditures needs for each local government unit.

This corresponds simply to the sum of the expenditure needs for each function in each local unit.

Table 3, Table 4 and Table 5 present the summary of the selected expenditure categories with their respective of estimated number of clients, together with the respective per client expenditure norm.

[24] It is important to note again that the standards per client can be easily adjusted upward or downward to the different costs of provisions of a particular service by applying a relative cost index to the standard. At the present time, we have no reliable data on cost differences for service delivery and therefore no such adjustments are performed.

Table 3. The computation of expenditure norms for provinces (2008 values, in Ph Pesos)

Expenditure category	Aggregate expenditures needs (total exps. 2008)	Estimated aggregate number of clients	Per client expenditure norm
General public services	20,953,886,720	68,607,096	305.42
Education, culture and sports	2,315,550,208	57,524,236	40.25
Health, nutrition and population control	9,033,858,048	20,681,986	436.80
Labor and employment	30,161,374	36,050,832	0.84
Housing and community development	827,712,832	3,781,205	218.90
Social security/social service and welfare	972983,232	3,030,817	321.03
Economic services	9,900,763,136	68,607,096	144.31
Debt servicing	1,594,355,840	68,607,096	23.24
Other purposes	10,519,157,760	68,607,096	153.32

Source: Authors' own calculations

Table 4. The computation of expenditure norms for cities (2008 values, in Ph Pesos)

Expenditure category	Aggregate expenditures needs (total exps. 2008)	Estimated aggregate number of clients	Per client expenditure norm
General public services	39,109,013,504	32,957,168	1,186.66
Education, culture and sports	9,308,789,760	27,868,748	334.02
Health, nutrition and population control	7,384,459,264	9,508,969	776.58
Labor and employment	45,499,684	18,663,172	2.44
Housing and community development	3182292480	4314455	737.59
Social security/social service and welfare	2,156,575,232	1,191,232	1,810.37
Economic services	14,982,636,544	32,957,168	454.61
Debt servicing	4,642,338,816	32,957,168	140.86
Other purposes	13,723,859,968	32957168	416.42

Source: Authors' own calculations

Table 5. The computation of expenditure norms for municipalities (2008 values, in Ph Pesos)

Expenditure category	Aggregate expenditures needs (total exps. 2008)	Estimated aggregate number of clients	Per client expenditure norm
General public services	43,324,829,696	55,436,636	781.52
Education, culture and sports	2,286,163,456	46,164,100	49.52
Health, nutrition and population control	6,438,859,776	16,678,747	386.05
Labor and employment	69,520,528	28,752,384	2.42
Housing and community development	983,428,864	18,695,866	52.60
Social security/social service and welfare	2,517,392,896	2,469,623	1,019.34
Economic services	10,452,777,984	55,436,636	188.55
Debt servicing	1,476,958,336	55,436,636	26.64
Other purposes	15,960,967,168	55,436,636	287.91

Source: Authors' own calculations

In Appendix 5, we provide a sample of the data generated to arrive to the expenditure needs of each LGU.

Estimation of expenditure needs using Weighted Indexes (EN2)

An alternative method for the estimation of expenditure needs is to use an adjusted version of the weighted index developed in the previous section.[25] For this purpose, first, it is necessary to get an aggregate estimate of expenditure needs for all LGUs in each subgroup. We will call these LENp, LENc, LENm, representing respectively the aggregate expenditure needs for the provinces (p), cities (c), and municipalities (m). For operational purposes, we are going to assume those aggregate expenditure needs are equal to the aggregate executed expenditures in the last year in each subgroup. These aggregates can be adjusted in different forms. Historical expenditures (of last year) can be adjusted upward to the current year by applying a growth index that may include the rate of inflation and possibly some real growth. Also each of the aggregates could be adjusted up or down depending on a priori perceptions that some of the aggregates may under-represent needs (perhaps the case of municipalities and perhaps also provinces) or over-represent needs (perhaps the case of cities). In future years, the same approach could be used and

[25] But recall that above the index formula is used to distribute the available funds in the FEEP. Here, the index formula is used differently, namely, to compute expenditure needs

of course the political factor can and should become more explicit in the setting and reordering of expenditure priorities from the top down.

Second, it will be necessary to adjust the index formula used above so that it includes only those factors representing expenditure needs. As we pointed out above, the index could be different for the different subgroups, thus reflecting differences in expenditure needs. Here we will just use an adjusted index that excludes the fiscal capacity factor:

$$AAI_i = \lambda_1(Pop_i/\Sigma Pop_i) + \lambda_2(Area_i/\Sigma Area_i) + \lambda_3\,(YoungPop_i/\Sigma YoungPop_i)$$

$$+ \lambda_4\,(OldPop_i/\Sigma OldPop_i) + \lambda_5(PovPop_i/\Sigma PovPop_i)$$

This index has the same properties as above and so they will not be repeated here. Table 6 summarizes the steps involved in estimating expenditure needs with this approach.

Table 6. Computing expenditure needs based on an index formula

Step 1.	**Determination of the aggregate level of local expenditure needs (LENp, LENc, LENm)** *These can be based on the most recent historical data but that data can be adjusted in different ways. In the computation we use executed budget data for 2008, and make no adjustments*
Step 2.	**Selection of expenditure needs factors** *The expenditure needs factors selected can differ among subgroups of LGUs : Here we will use population, land area, young population, elderly population and population living in poverty.*
Step 3.	**Computation of each local unit's relative need for each factor** *The share of population for each local government in the entire population is* $Pop_i/\Sigma Pop_i$ (and so on.

Step 4. **Determination of the relative importance or weights of each needs factor**

The weights are assumed to be $\lambda 1 = 0.40$; $\lambda_2 = 0.15$; $\lambda_3 = 0.15$; $\lambda_4 = 0.15$; $\lambda_5 = 0.15$

Other sets of weights could be assumed and be simulated.

Step 5. ***Calculation of the expenditure need for locality i as:***

$Need_{ip} = AAI_{ip} \cdot LENp$ *for provinces*
$Need_{ic} = AAI_{ic} \cdot LENc$ *for cities*
$Need_{im} = AAI_{im} \cdot LENm$ *for provinces*

A summary of the computation is shown in Table 7 and an example of the data computation to arrive at the results is shown in Appendix 6.

Table 7. Per capita expenditure needs using weighted index formula (Descriptive statistics for 2008 in PhP)

	Provinces	Cities	Municipalities
Min	567.15	1,991.18	968.02
Max	1,844.61	6,997.48	107,315.7
Average	899.68	3,541.45	1,762.22
Standard deviation	186.90	1,222.11	2,824.68
Coefficient of variation	0.21	0.35	1.60

Source: Own Calculations.

Approaches to estimating fiscal capacity

Below we review two possible approaches to estimate the fiscal capacity of LGUs. Fiscal capacity has been defined as the potential revenue that a local government can raise from its tax base, exerting an average level of effort. Thus, in order to measure fiscal capacity, it would be natural to focus on those revenues sources over which local governments have a certain degree of autonomy (i.e. the capacity to modify either the base or the rates applied). These are usually referred to as own revenues. Other revenues, such as shared taxes and transfers, of course, provide local governments with revenues, but since they cannot be directly affected by local

governments, they can be accounted for directly by the amounts actually received by local governments for those concepts.

The adequate estimation of local fiscal capacity becomes important because of the ability local governments have to affect actual tax collections. As the fiscal gap (and thus the FEEP transfer actually received) is expected to be larger with lower fiscal capacity, there may be an incentive for government officials to reduce tax effort from their own revenue sources (those over which they can exert effective autonomy). In contrast, as just remarked above, those other revenue sources not subject to the influence of local government actions, such as shared taxes or other transfers, do not present any difficulty in this regard. For revenues outside the control of local governments, historical or actual revenues usually represent a good approximation to revenue collection capacity.

The problem of estimating fiscal capacity is therefore reduced to the adequate estimation of (properly defined) own revenues. Thus we can define over all fiscal capacity as the sum of estimated potential own revenues (EOR_i), and all other shared revenues and transfers received (OT) other than the FEEP transfer. The fiscal capacity of a local unit i can then be computed as:

$$FC_i = EOR_i + OT_i,$$

Unfortunately, there is usually a lack of data on tax bases which limits our ability to properly estimate own revenue capacity. Nevertheless there is information on cadastral values for the property tax which we will try to use.

Regardless of the methodology used to estimate potential own revenues, overall per capita fiscal capacity is obtained, as shown in the formula, by adding up the estimate of own revenues to the actual shared revenue shares and all transfers (except for those received from the FEEP.)

In the following discussion we present two methodologies for estimating potential own revenues (EOR_i).

Estimation of Fiscal Capacity using Average of Past Collection Ratios (FC1)

In the absence of detailed local data the estimation of fiscal capacity can be based on historical information available for local fiscal revenues. In general terms, this methodology can be described by the following procedure:

Step 1: Select the revenue sources and time periods that would help to estimate the ability of local governments to collect their own revenues (OR_i), and for which complete information is available. It is useful to use, for example, average data for the last three years. The categories considered in the estimation should be those for which local government units have some discretion or ability to change effort of collection. So this category should include perhaps fully assigned taxes to local units plus all user fees and charges.

Step 2: Compute revenues based on the local revenue source *j*, F_j, for each local unit *i* and do the same at the national level for all local units in the same subgroup. We can define

$F_{ij} = ocal\ revenues\ from\ j$ as the revenue from source *j* in each in local unit *i*

and $F_{Nj} = total\ revenues\ in subgroup from\ j$

as the revenue in the set of all local units in the subgroup from source *j*. It follows that total current own revenues for the local unit i is given by $\sum_j F_{ij}$ and for the entire subgroup of local units by $\sum_j F_{Nj}$.

Stressing a very important issue, the estimation of fiscal capacity should be based on *potential revenues*. As explained, the use of historical or actual fiscal revenues might result in providing perverse incentives to local governments. A practical way of facing this problem is to consider an average of the relative (with respect to the national level) per capita tax collections for a relatively longer period of time (say, three years) as an indicator of local fiscal capacity. The idea is in using averages of several periods, it will become more difficult for local units to alter the indicator of relative fiscal capacity.

Step 3: Compute the index of relative fiscal capacity, $IRFC_i$, for each subgroup of local units (*Provinces, Cities, and Municipalities)* which can be defined as the historical average (2008-2010) of $\sum_j F_{ij} / \sum_j F_{Nj}$, representing the relation between the own revenue of local unit *i* and the one for the entire subgroup.

Step 4: Compute the fiscal capacity for each municipality *i* in each subgroup as:

$$FC_i = IRFC_i \cdot \textit{aggregate forecast of collections for the entire subgroup}$$

such that FC_i can be interpreted as the amount of collections that a local governments would have in the projected period. For the purpose of the simulations, we will use the aggregate own revenue collections for each subgroup of the last year available as a way to define "*aggregate forecast of collections for the entire subgroup."* Note that the aggregate forecast of collections for the entire subgroup for future years could be obtained by applying a growth index to the base year based on the inflation rate and some estimate of real growth for the main tax bases.

Although at the present time the implementation of this methodology is less than ideal, it may be a good alternative to estimate potential own revenues and fiscal capacity of LGUs in the short term. The data required in this approach are not difficult to generate, and the use of several periods provides a simple and effective way to reduce the perverse incentives' problem but clearly it does not eliminate it.

A sample of the data and procedures followed to estimating the capacity with the average of past collection ratios is shown in Appendix 7 while the summary descriptive statistics are shown in Table 8.

Table 8. Per capita fiscal capacity using Average of Past Collection Ratios (Descriptive statistics)

	Provinces	Cities	Municipalities
Min	431.87	1,434.61	441.95
Max	11,126.72	15,526.94	269,194.9
Average	1,357.81	3,464.35	2,288.65
Standard deviation	1,295.27	1,582.38	7,105.55
Coeff. of variation	0.95	0.46	3.10

Source: Own Calculations.

Estimation of Fiscal Capacity using Basic Proxies (FC2)

Another methodology that can be used to calculate local fiscal capacity is to employ a proxy (or proxies) that are highly correlated with a local unit's own capacity to collect revenues. Ideally, one would use some measure of gross local product or per capita income, but lacking those data we propose to use property value assessments as a proxy for the entire own revenue capacity (and not just property taxes). This may be less than ideal because a good proxy requires that local government units do not have any capacity to modify the values the proxy takes.

The logic behind using property value assessments lies in that first it is the variable available that is close to some measure of tax bases and second, that is not unreasonable to think that if assessed values are high other tax bases in the local governments are also likely to be high. That is, we would anticipate that property value assessments are highly correlated with other local tax bases. Unfortunately, we only have property value assessments for provinces and cities, but not for municipalities. Therefore, this measure of fiscal capacity 'FC2' is only calculated for provinces and cities.

The basic regressions of local own revenues on property value assessments are shown in Table 9. The relative high values of the R-square indicate a good fit and high explanatory power of the chosen proxy. The summary statistics for the estimated fiscal capacity are shown in Table 10. Cities on average, and as expected, have higher per capita fiscal capacity, more than double the

per capita capacity of provinces. The variation in the estimates is quite lager in the case of the provinces as measured by the coefficient of variation.

Table 9. Property value assessments as a Proxy Variable for Local Own Revenues

	Province		*City*		*Municipality*	
	Coefficients	***t - Stat***	***Coefficients***	***t - Stat***	***Coefficients***	***t - Stat***
Constant	4.69e+07	4.28	1.50e+07	0.40	-	-
Property Tax Assess coefficient	.007	13.73	0.042	31.25	-	-
R-square	0.71		0.88		-	-
F-Statistic	188.38		976.47		-	-

Source: Department of Finance and own calculations.

Table 10. Per capita fiscal capacity using basic proxies (Descriptive statistics for 2008 in PhP)

	Provinces	**Cities**	**Municipalities**
Min	433.12	1,416.93	-
Max	10,759.2	12,544.29	-
Average	1,346.35	3,512.88	-
Standard deviation	1,255.44	1,575.95	-
Coeff. of variation	0.93	0.45	-

Source: Own Calculations.

Coming up with the Fiscal Gap for LGUs

The two last sub-sections have dealt with the methodologies for estimating, separately, expenditure needs and fiscal capacity for each LGU. In this section we look at the possible combinations of those measures in order to compute the fiscal gap for LGUs.

From the combination of the alternative methodologies described above, we can derive up to four measurements of fiscal gaps for the three groups of LGUs. Naturally, each measurement would lead to a different distribution of the FEEP funds across the LGUs. The four alternatives are presented in the following chart:

		Fiscal Capacity Measurement	
		Average of Past Collection Ratios (FC1)	**Basic Proxy (FC2)**
Expenditure Needs Measurement	**Per Client Expenditure Norms (EN1)**	*Fiscal Gap Measure 1*	*Fiscal Gap Measure 2*
	Weighted Indexes (EN2)	*Fiscal Gap Measure 3*	*Fiscal Gap Measure 4*

Thus, for instance, *Fiscal Gap Measure 3* is based on the estimation of expenditure needs according to the weighted indexes' methodology (EN2) and the estimated value of local fiscal capacity obtained by using the average of past collection ratios (FC1), such that the fiscal gap be defined as:

FG3 = EN2 – FC1.

Naturally, different measures of fiscal gaps will be obtained from different combinations, and a discussion ensues as to which of the available alternatives make more sense to be used in the distribution of the FEEP in the short to medium term. In Tables 11 to 13 we present descriptive statistics for the four alternative measures and to make them more comparable we express them in per capita terms.

It needs to be clear that no measure of fiscal gap can be said to be superior to another based only on these statistics, but it is important to have a notion about the distribution of per capita fiscal gaps in order to evaluate and compare the performance of the alternative methodologies. In truth, what matters is the quality of the estimations of expenditure needs and fiscal capacity. The more accurate those estimations are, then the more reliable will be the estimation of per capita fiscal disparities.

Table 11. Fiscal Gaps for Provinces (Descriptive statistics)

(2008 values, in PHP)	Fiscal Gap Measure 1	Fiscal Gap Measure 2	Fiscal Gap Measure 3	Fiscal Gap Measure 4
Min	-3,141.47	-3,314.35	-2,685.70	-2,858.58
Max	375.06	373.81	359.97	358.72
Range (max - min)	3,516.53	3,688.16	3,045.67	3,217.30
Average	-413.12	-398.38	-332.89	-318.15
Standard deviation	668.93	669.26	556.39	557.41
Average of positive fiscal disparities	106.15	111.51	126.22	109.86
Number of localities with positive FD	21	19	16	20

Source: Own calculations

Table 12. Fiscal Gaps for Cities (Descriptive statistics)

(2008 values, in PhP)	Fiscal Gap Measure 1	Fiscal Gap Measure 2	Fiscal Gap Measure 3	Fiscal Gap Measure 4
Min	-12,754.2	-9,771.62	-13,503.8	-10,521.2
Max	1,394.33	1,477.18	2,986.23	2,940.93
Range (max - min)	14,148.59	11,248.80	16,490.09	13,462.14
Average	-517.18	-559.21	86.41	27.18
Standard deviation	1,599.82	1,577.06	1,943.91	1,871.69
Average of positive fiscal disparities	467.71	488.73	988.12	956.84
Number of localities with positive FD	55	54	90	85

Source: Own calculations

From Tables 11 to 13 it is important to note that the results from the four proposals are mostly consistent in terms of the determination of local units with positive fiscal disparities (i.e. expenditure needs greater than fiscal capacities); perhaps the exception is for the case of cities.

Table 13. Fiscal Gaps for Municipalities (Descriptive statistics)

(2008 values, in PhP)	Fiscal Gap Measure 1	Fiscal Gap Measure 2	Fiscal Gap Measure 3	Fiscal Gap Measure 4
Min	-26,7796.6	-	-16,1879.3	-
Max	1,042.23	-	1,176.10	-
Range (max - min)	26,8838.8	-	16,3055.4	-
Average	-776.57	-	-530.03	-
Standard deviation	7146.20	-	4372.80	-
Average of positive fiscal disparities	205.23	-	193.91	-
Number of localities with positive FD	467	-	493	-

Source: Own calculations

Following the discussion presented throughout this report, one of the two most important goals of the FEEP will be to reduce the differences in fiscal disparities (or fiscal gaps) across LGUs. In practical terms, this requires reducing to a greater extent the largest local fiscal disparities.

Any measurement of (per capita) fiscal gap provides a natural criterion for the assignment of FEEP funds. Those local units with negative fiscal gaps (with fiscal capacity exceeding their expenditure needs) do not require, in principle, funds from the FEEP program. At the same time, those localities with larger (positive) fiscal gaps should receive greater (per capita) transfers than others with smaller fiscal disparities. These are widely accepted principles. However, how big a per capital fiscal gap should be in order to define a local unit as beneficiary and how much more FEEP funds should be given to a relatively "needy" jurisdiction are open questions which cannot receive definite answers. Below, we implement one of several alternative approaches to apportioning the available FEEP funds among local units with positive fiscal disparities, which we can label the *proportional* allocation mechanism. This approach apportions the available transfer funds among local units as a fixed proportion of their (positive) fiscal disparities within each subgroup of LGUs. No matter what the size of fiscal disparity is, all local units with a positive fiscal gap will receive a transfer from the FEEP, and the size of the transfer will depend on the percentage of total positive disparities represented by that local unit and, of course, on the size of the FEEP funds to be transferred.

This latter point brings us back to the issue of the vertical distribution of the FEEP funds across the different subgroups. Here we will make two sets of assumptions for actually implementing the FEEP distributions. In the first case, we repeat the vertical distribution assumed in the subsection above "Simpler approach--Expanding the weighted index formula in the IRA" and assign 28.75 percent of the available FEEP funds to the provinces, 28.75 percent to the cities, and 42.50 percent to the municipalities.

In the second approach, we apportion the FEEP funds proportionally to the total (positive) fiscal gaps for each subgroup of LGUs. In order to arrive at these proportions we add all the (positive) fiscal gaps across the three subgroups of LGUs and then derive the proportion for each. As we have discussed above, this approach is far from ideal because our estimations of fiscal gaps is conditional on the current systems of intergovernmental finance, including the IRA. In the future, it will be possible to arrive at measures of fiscal gap that are based on normative statements of expenditure needs of the different LGUs. That would provide a better justification for the vertical apportionment of the FEEP funds based on the proportional size of aggregate fiscal gaps for the different subgroups of LGUs.

The results from implementing the "Proportional Allocation Mechanism" for FEEP Funds:

In order to apportion the available FEEP funds for the three subgroups of LGUs we first compute the relative fiscal gaps for provinces, cities, municipalities following the steps described above.[26] The results for the relative fiscal gaps, which, recall, only apply to those LGUs with positive fiscal gaps, are shown in Tables 14 to 16, for provinces, cities and municipalities, respectively.. Examples of the steps followed for these computations are shown in Appendix 8.

[26] See the section "***Distributing the FEEP funds on the basis of estimated fiscal gaps of LGUs"*** above in this paper.

Table 14. Relative Fiscal Gaps for Provinces (Descriptive statistics)

	Relative Fiscal Gap Measure 1	Relative Fiscal Gap Measure 2	Relative Fiscal Gap Measure 3	Relative Fiscal Gap Measure 4
Min	0.0006	0.0015	0.0067	0.0027
Max	0.1683	0.1764	0.1782	0.1633
Range (max - min)	0.1677	0.1749	0.1716	0.1605
Average	0.048	0.053	0.063	0.050
Standard deviation	0.043	0.045	0.043	0.039

Source: Own calculations

Table 15. Relative Fiscal Gaps for Cities (Descriptive statistics)

	Relative Fiscal Gap Measure 1	Relative Fiscal Gap Measure 2	Relative Fiscal Gap Measure 3	Relative Fiscal Gap Measure 4
Min	0.0004	0.0002	0.0012	0.0001
Max	0.0542	0.0560	0.0336	0.0362
Range (max - min)	0.0538	0.0558	0.0323	0.0360
Average	0.0182	0.0185	0.0111	0.0118
Standard deviation	0.0143	0.0128	0.0070	0.0076

Source: Own calculations

Table 16. Relative Fiscal Gaps for Municipalities (Descriptive statistics)

	Relative Fiscal Gap Measure 1	Relative Fiscal Gap Measure 2	Relative Fiscal Gap Measure 3	Relative Fiscal Gap Measure 4
Min	6.27E-07	–	3.84E-06	–
Max	0.010875	–	0.012303	–
Range (max - min)	0.010874	–	0.012299	–
Average	0.002141	–	0.002028	–
Standard deviation	0.001568	–	0.001541	–

Source: Own calculations

Table 17 provides the summary descriptive statistics for the allocation of FEEP transfers assigned using the fiscal gap measure 1 (FG1) (i.e. with per-client expenditure norms for measuring expenditure needs (EN1) and the average of past collection ratios for measuring fiscal capacity (FC1), also using the proportional allocation mechanism for the apportionment of the

funds, and using the vertical distribution assumed in the subsection above "Simpler approach--Expanding the weighted index formula in the IRA" by assigning 28.75 percent of the available FEEP funds to the provinces, 28.75 percent to the cities, and 42.50 percent to the municipalities.

Table 17. Per capita FEEP Transfers under Proportional Allocation and Adjusted IRA Vertical Distribution Rule (for 2008 in PhP)

	Provinces	Cities	Municipalities
Min	0	0	0
Max	2031.23	4445.48	9068.76
Average	126.42	576.52	315.71
Standard deviation	326.42	1016.61	669.30
Coeff. of variation	2.58	1.76	2.12
Total FEEP transfers (in million PhP)	15,376.74	15,376.74	22,730.83

Source: Own Calculations.

Next, we perform an alternative allocation of the FEEP transfers by using the same set of assumptions except for the vertical distribution of the funds among provinces, cities, and municipalities. Here we apportion the FEEP funds proportionally to the total (positive) fiscal gaps for each subgroup of LGUs. Thus, first we compute the proportions or shares in the total for positive fiscal gaps across the three groups of LGUs. The allocation of FEEP transfers that would follow if we were to use this vertical distribution rule would be quite different from those in Table 17. As shown in Table 18, for the summary statistics of this distribution, the clear winners, vis-à-vis the results in Table 17, would be the municipalities. Both provinces and cities would be relative losers, and more so for the provinces.

The horizontal distribution rule applied in both Tables 17 and 18 is an example of how this allocation can be done. As we have seen, there are other possibilities for the horizontal allocation and they are all legitimate. Improving on the horizontal allocation rule will be conditioned by the improvements of the available data so that more sophisticated methodologies can be used to capture expenditure needs and fiscal capacity.

Table 18. Per capita FEEP Transfers under Proportional Allocation and Share of Aggregate Fiscal Gap Vertical Distribution Rule (for 2008 in PhP)

	Provinces	Cities	Municipalities
Min	0	0	0
Max	127.17	3,213.12	16,520.08
Average	7.92	416.70	575.12
Standard deviation	20.44	734.79	1,219.23
Coeff. of variation	2.58	1.76	2.12
Total FEEP transfers (in million PhP)	9,627.18	11,114.03	41,407.54

Source: Own Calculations.

On the other hand, fundamentally, there are no very strong reasons supporting either modality of vertical allocation of the FEEP funds among the three subgroups of LGUs respectively used in Table 17 and Table 19. Their advantage is that they offer a rationale for the vertical distribution as opposed to some rule that is arbitrarily derived. However, as we have argued above in the paper, we could arrive at a strong vertical allocation rule if we were to use normatively derived expenditure norms in the computation of expenditure needs for all LGUs. This would also improve the horizontal distribution of the funds within each subgroup of LGUs. But as we have already indicated, this paper cannot make those adjustments. They only can be done by the Government of the Philippines.

To close this section we examine some of the dimensions of the equalization impact of distributing the FEEP funds using a fiscal gap approach.

First we must note again that not all LGUs receive transfers funds under this approach. As we find in Tables 11 to 13 above, only a share of provinces, cities and municipalities end up with a positive fiscal gap and would therefore be entitled to receiving FEEP funds. Based on the total numbers for the different subgroups of LGUs,[27] our simulations show that only between 20 and

[27] The percentages that follow are based on totals of 78 provinces, 136 cities, and 1,492 municipalities.

27 percent of the provinces would receive FEEP funds, between 40 and 61 percent of cities, and between 31 and 33 percent of municipalities. [28]

Table 19. Coefficient of Variation of the Per Capita Incomes Available Before and After FEEP

	Provinces	Cities	Municipalities
Before FEEP	0.936	0.445	3.108
After FEEP 1	0.510	0.383	2.714
After FEEP 2	0.471	0.356	2.733
After FEEP 3	0.542	0.360	2.497

Note: FFEP 1 represents FEEP transfers under adjusted weighted index horizontal distribution formula and adjusted IRA vertical distribution rule; FEEP 2 represents FEEP transfers under proportional allocation and adjusted IRA vertical distribution rule; FEEP 3 represents FEEP transfers under proportional allocation and share of aggregate fiscal gap vertical distribution rule.

Second, the impact of the FEEP distribution is equalizing as can be seen in Table 19 by the significant reductions in the coefficient of variation for per capita income available before and after the distribution of the FEEP within the provinces, cities, and municipalities.

Third, the amounts per capita distributed with the FEP are not at all trivial if we compare them side by side with the amounts per capita received from the IRA; actually in many cases they can be much higher. In Tables 20 to 22 we show the per capita amounts received from the IRA and from the FEEP for the ten largest winners (in per capita FEEP amounts) for the provinces, cities and municipalities.

[28] It needs to be recalled that not all cities are well-off and that the computed fiscal gap is still a relative concept based on historical data. Because there are few cities that are very rich that is likely to pull a large number of other cities into having a positive fiscal gap. A lot of these numbers could change in the future once absolute measures of expenditure needs are derived.

Table 20. Per Capita IRA and FEEP for the Ten Largest Winners from the FEEP (based on the fiscal gap 1): Provinces

Region	Province	IRA	FEEP 1	FEEP 2	FEEP 3
Region XII	Maguindanao	412.634	204.548	2031.225	127.172
Region III	Nueva Ecija	491.088	190.542	941.812	58.966
Region III	Pampanga	473.961	158.447	784.321	49.105
Region V	Camarines Sur	590.530	214.251	843.024	52.781
Region I	Pangasinan	492.485	172.967	482.037	30.180
Region IX	Sulu	633.692	210.077	1305.255	81.720
Region VI	Iloilo	577.965	197.140	513.449	32.146
Region IV-A	Rizal	432.889	144.583	363.529	22.760
Region VII	Bohol	671.935	228.898	556.333	34.831
Region VI	Negros Occidental	593.041	187.058	279.647	17.508

Note: Year 2008 data. FFEP 1 represents FEEP transfers under adjusted weighted index horizontal distribution formula and adjusted IRA vertical distribution rule; FEEP 2 represents FEEP transfers under proportional allocation and adjusted IRA vertical distribution rule; FEEP 3 represents FEEP transfers under proportional allocation and share of aggregate fiscal gap vertical distribution rule.

Table 21. Per Capita IRA and FEEP for the Ten Largest Winners from the FEEP (based on the fiscal gap 1): Cities

Region	City	IRA	FEEP 1	FEEP 2	FEEP 3
Region XII	Cotabato City	1333.994	543.052	3216.155	2324.581
Region III	San Jose del Monte City	1013.657	366.653	1893.676	1368.716
Region XII	Marawi City	1372.108	544.568	4376.881	3163.533
Region XII	General Santos City	1251.368	396.923	1103.752	797.773
Region IV-A	Antipolo City	1048.766	332.166	906.155	654.953
Region I	San Carlos City	1702.440	609.463	3524.536	2547.473
Region VII	Talisay City (Cebu)	1260.918	471.279	3083.100	2228.411
Region V	Tabaco City	1774.952	645.854	4445.481	3213.116
Region III	Malolos City	1234.820	439.594	2392.208	1729.046
Region IX	Zamboanga City	1493.793	440.437	681.666	492.697

Note: Year 2008 data. FFEP 1 represents FEEP transfers under adjusted weighted index horizontal distribution formula and adjusted IRA vertical distribution rule; FEEP 2 represents FEEP transfers under proportional allocation and adjusted IRA vertical distribution rule; FEEP 3 represents FEEP transfers under proportional allocation and share of aggregate fiscal gap vertical distribution rule.

Table 22. Per Capita IRA and FEEP for the Ten Largest Winners from the FEEP (based on the fiscal gap 1): Municipalities

Region	Province	Municipality	IRA	FEEP 1	FEEP 2	FEEP 3
Region IX	Tawi-Tawi	Balimbing	439.561	403.718	4894.385	8915.842
Region IX	Basilan	Maluso	745.383	351.985	3496.870	6370.063
Region XII	Maguindanao	Datu Odin Sinsuat	654.487	328.303	1533.682	2793.828
Region VII	Cebu	Barili	745.354	361.131	2604.800	4745.025
Region IX	Sulu	Jolo	747.425	272.250	1116.778	2034.376
Region XII	Lanao Del Sur	Piagapo	850.203	459.664	4373.018	7966.094
Region XII	Maguindanao	Matanog	848.958	419.647	4149.793	7559.458
Region IX	Sulu	Indanan	860.292	312.326	1712.173	3118.974
Region XII	Maguindanao	Parang	731.079	338.620	1383.433	2520.127
Region XII	Maguindanao	Talayan	870.496	441.588	5355.485	9755.804

Note: Year 2008 data. FFEP 1 represents FEEP transfers under adjusted weighted index horizontal distribution formula and adjusted IRA vertical distribution rule; FEEP 2 represents FEEP transfers under proportional allocation and adjusted IRA vertical distribution rule; FEEP 3 represents FEEP transfers under proportional allocation and share of aggregate fiscal gap vertical distribution rule.

V. Performance-based evaluation of recipient LGUs

A key element in the design of the FEEP will be to ensure that these additional funds will be used by LGUs to improve their service delivery performance. There are essentially two different approaches that can be used with the end of monitoring and improving the performance of LGUs. The first is a traditional approach using ex-ante controls and conditions on how the LUGs can deploy the additional funds. These include regulations for how the funds may be spent, what kind of inputs can be used, pre-approval of local decisions by higher authorities, and so on. The trend in budgeting policy and practice worldwide has been toward deemphasizing or plainly abandoning this approach. The second option is to focus on the performance of LGUs by examining ex-post what they have been able to achieve in what ultimately matters, visible quantifiable improvements in the quality and quantity of public services for which they are responsible. This new trend merges perfectly well with the emphasis at the national level on performance-based budgeting and medium-term budgeting frameworks. However, there are significant difficulties in implement this second approach. In the real world, it tends to be simpler and easier to measure inputs than to measure outputs. In particular, the measurement of the quality and quantity of many public services can be quite challenging. But significant advances have been made in this area, and therefore, despite the challenges, it would seem that

using ex-post performance-based evaluation would be the best direction to go to ensure the more efficient use of FEEP funds.

Although they are not uncommon, the experience worldwide with performance-based grants is not yet large. Bergvall et al. (2006) review some of the European experience with this type of grants and Shah (2009) reviews the experiences of other developed and developing countries. Actually some of the performance-based grants in other countries are quite recent, such as Australia's "National Schools Specific Purpose Payments' and the U.S. "Race to the Top Competitive Grant Program." Among developing countries, Brazil has implemented performance-based grants for education and health. Other countries, including Argentina, Chile and Indonesia have implemented this type of grants for a variety of service, including roads, water, or even social insurance.

In general, there are different implementation paths that can be followed. Two important objectives would be to preserve a high degree of autonomy of LGUs and to give them enough time to adjust and ratchet up their performance. This latter will be important because many of the recipient LGUs will be relatively poorer ones with lower administrative capacity.

What is proposed here is to provide LGUs a period of time (for example, 3 years)[29] after receiving the additional funds to show proof of improved performance in a number of carefully selected indicators. In the case of unsatisfactory performance a probationary period of 3 more years but with reduced funding from the FEEP of 50 percent would be granted. In the case of failure again after the probationary period the FEEP allocation would be terminated for say a period of 3 additional years. After that a new cycle could be started for qualifying LGUs under the FEEP horizontal distribution rules. Of course, these are suggestive periods and rules and will be subject to modification and improvements through a dialog with stakeholders, especially the associations of LGUs.

[29] The selection of the time period may not be a simple matter since the typical terms of local officials is 3 years, so it is not clear that the right incentives would be in place.

A big challenge will lie in the selection of the performance indicators. The indicators at a minimum should meet these characteristics or properties. They need to be measured independently from the LGUs themselves; that is, they cannot be self-reported to avoid moral hazard problems. Ideally, the measurements will be provided by an independent agency which is accepted with respect and credibility by all stakeholders. The indicators also need to be 'meaningful'; that is to matter in a significant way for quality and quantity of public services and ultimately for the quality of life of the residents in each LGU.

An additional challenge is that whatever indicators are selected, the different LGUs are likely to start in terms of those indicators at different points. This means that if the indicator levels are chosen to be low, many LGUs would just automatically qualify, which would produce no inducement to increase performance. A potential solution to this dilemma may be to focus on differentiated changes in those indicators as opposed to the levels per se of the indicators. But this choice will not be free of problems because the relative difficulty of achieving advances in the different indicators is not likely to be independent of the level of the indicator itself; for example, improvements may be easier to achieve at relatively low levels of the indicator. This is an area that will require ample discussion and consensus reaching with stakeholders.

One first choice of performance criteria is whether they should concentrate exclusively on the expenditure-service side of the budget or could also include criteria from the revenue side of the budget.

There are good arguments to include the revenue side of the budget as part of the performance indicators. Many observers of the decentralization process in the Philippines have highlighted the low level and declining trend in own revenue collections by LGUs A possible performance criterion would involve certain percent increases in the collection of property taxes, or perhaps all own revenues.

However, it is clear that the bulk of the performance criteria would come from the expenditure-service side of the budget. An important decision will be whether to focus on the outputs of services or else on the outcomes. In general, the indicators should preferably be service outputs,

as opposed to outcomes, given the local jurisdictions tend to have much less control for service outcomes. For example, local jurisdictions can do much more to ensure high rates of vaccination or enrollments rates for children. They are less able to control the overall health of children or their overall level of intellectual achievement since these outcomes depend on many other variables, including the income and level of education of parents, which are outside the control of the local governments. The property of "meaningfulness" could be met if the performance indicators were to focus at least in part on the Millennium Development Goals (MDG) in the areas of health, education and poverty reduction. Possible candidates for performance measurement could include: the percent change in infant mortality rate, the percent change in enrollment rates, and percent change in access to potable water. But as simple as these indicators may look, there would still be formidable difficulties in getting them implemented.

In the first place, even though they are all meaningful and desirable outcomes, they may not be well under the control or doings of LGUs since there are other influencing factors out of the control of LGUs. For example, enrollment rates may depend on agricultural production cycles and related family demands. Thus some thought needs to be given to the selection of those types of outcomes as indicators vis-à-vis intermediate outputs, which will be more under the control of LGUs, for example, the percent of doctor-assisted births. In the second place, even when the outcome indicators are thought to be the right ones, the challenge will be to measure them in an objective and consistent basis. All this means that considerable further thought and discussions will need to be put into arriving at the FEEP performance indicators.

So there will be important challenges ahead in selecting the appropriate performance indicators. Fortunately, solid foundation work has been already done in the Philippines in the area of LGU performance measurement, as for example by Sosmeña et al. (2004) and Guillermo (2008). The Department of Interior and Local Governments (DILG) has developed its own Local Government Performance Measurement System (LGPMS) which also provides a good starting point for the selection of the proper performance indicators.[30]

[30] See also the background report from the Department of Finance (2008).

VI. Summary and conclusions

The main transfer instrument from the central governments to local government units (LGUs) in the Philippines, the IRA (Internal Revenue Allotment), introduced in 2001, has been criticized for two main failings: its inability to equalize sufficiently, especially regarding the poorer municipalities and provinces, and that its funds have not been spent in an efficient manner. Recently LGU associations have petitioned the Government of the Philippines (GoP) for an expansion in the funding of the IRA from 40 percent of internal revenue collections to 50 percent, and several draft Bills have been prepared. There appears to be ample consensus that if the additional 10 percent in funding were to take place, these funds should not be distributed following the same methodology used for the IRA. Two general requirements are often mentioned: that the additional funds would need to have a much stronger equalization effect among LGUs, and that the recipient LGUs use the funds to improve the performance of public services.

The design of the new transfer -- the fund for "Fiscal Equity and Expenditure Performance" or FEEP-- for 10 percent additional funding as separate from the IRA will face four major challenges: (1) How to concretely define the origin and computation of the 10 percent additional funding (2) How to apportion the additional funding among the different groups of LGUs (provinces, cities, municipalities, and barangays) (3) What formula to use for the distribution of the additional funds for qualifying LGUs in each particular group of LGUs (4) How to ensure that the additional funds will be used by LGUs to improve their service delivery performance These four challenges are addressed in this paper.

Regarding how to concretely define the origin and computation of the 10 percent additional funding, we have explored two basic options: Using the same base as for the IRA, which is internal revenue collection, or using the broader base of total national revenues, which expands the IRA base to include all the collections also realized by the Customs Office. Obviously, the 10 percent equivalent increase in funding would be the same under both options. The only difference is how the two bases perform in the future, in particular from the viewpoint of their volatility. We find that although there is some evidence that the broader base exhibits a bit more

volatility over time, the differences are not too significant. Therefore, there is not a clear preference for either of the two bases for the FEEP.

Perhaps the greatest challenge in designing the FEEP is how to apportion the additional funding among the different groups of LGUs (provinces, cities, municipalities, and barangays). In the paper we explore several possibilities. One of the options considered is a modified IRA apportionment by excluding the Barangays from the vertical distribution. We also consider a second option with the vertical distribution among provinces, cities and municipalities being proportional to their respective aggregate positive fiscal gaps, where those fiscal gaps are estimated in this paper. The advantage of either approach is that they offer a rationale for the vertical distribution as opposed to some new rule that is again arbitrarily derived. Fundamentally the only sound approach to the derivation of the vertical distribution rule is to institute it in accordance with the true expenditure needs of the different subgroups of LGUs. The expenditure needs derived in this paper are based on recent budget data and of course they do not necessarily coincide with what is considered to be the 'true' expenditures needs. That is, the expenditure needs we derive in the paper reflect the actual expenditures of different LGUs. If, for example, cities receive proportionally much more funds than municipalities, the budgetary data and therefore the computed expenditure needs will reflect higher expenditure needs for cities when this actually may not be the case from a normative stand. In the paper we argue that we can arrive at a strong vertical allocation rule if we were to use normatively derived expenditure norms in the computation of expenditure needs for all LGUs. But as we also indicate, this paper cannot make the normative decisions necessary for the true expenditure needs. This only can be done by the Government of the Philippines.

The main body of the paper addresses the question of what formula to use for the distribution of the additional funds for qualifying LGUs in each particular group. Here there seems to be clear the consensus on the need to improve the current formula used for the IRA distributions and based on a weighted index of population, land area, and equal shares. In the paper we develop two alternative approaches. First we improve and expand the weighted index approach now used in the IRA by introducing additional factors to better proxy the difference in expenditures needs. These factors include the young and elderly populations and the incidence of poverty. We also

introduce an additional factor accounting for the differences in fiscal capacity across LGUs. The second approach consists in the estimation of a fiscal gap, defined as the difference between expenditure needs and fiscal capacity, for each LGU. The paper reviews the different methodologies available for the estimation of expenditure needs and fiscal capacity and it implements with data for 2008 two measures for the estimation of expenditures needs and also two measures for the estimation of fiscal capacity. The simulations of the FEEP transfers are carried out with the different methodologies assuming two different vertical allocation rules (across subgroups of LGUs). The first is a modified IRA allocation rule (excluding Barangays) and the second is in proportion to the aggregate positive fiscal gaps in each subgroup of LGUs (provinces, cities and municipalities). Using the fiscal gap approach allows restriction of FEEP transfers only to those LGUs that have a positive fiscal gap (that is, where expenditure needs exceed fiscal capacity). Under the (expanded) weighted index approach all LGUs receive FEEP transfers.

The last section of the paper addresses the issue of how to make sure that the additional FEEP funds will be used by LGUs to improve their service delivery performance. As opposed to using ex-ante conditionality for receiving the additional funds, the paper proposes to use ex-post performance indicators. This approach preserves a higher degree of autonomy of LGUs. The carefully selected performance indicators would need to be measured independently from the LGUs themselves and should be meaningful in mattering in a significant way in the quality of life of LGU residents. The indicators should preferably be service outputs, as opposed to outcomes, given the local jurisdictions tend to have much less control for service outcomes. Because of very different starting points in most indicators for different LGUs, performance would need to be read as differentiated changes in the selected indicators. Failure to deliver improved performance in the set period, say after 3 years, would be followed by suspension of half of the available funding. After another round or period of performance, for example three more years, the funding could be completely suspended, with continued failure to improve, or fully restored, with increased performance. Although the paper explores the past experience in the Philippines with performance indicators and the several possibilities there may be available, the actual selection of the performance indicators will require further work in the future.

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Appendices

Appendix 1. The Basic Rationale and Measurement of Weights for Expenditure Need Factors

There are two main ways to approach the measurement of expenditure needs factors: the number of clients and the cost of standard local service provision.

The number of clients can be used when the cost of the public service varies directly with the number of users. In particular, when the *per unit* cost of the public service is the same across jurisdictions and does not change with the number of users, a direct application of this approach would be the best option to estimate expenditure needs.

If an expenditure need factor captures the number of consumers for a particular local service, then the natural choice for the weight assigned to this factor would be the percent of *aggregate* local expenditures accounted for expenditures on this particular service. For instance, if education is 43 percent of the aggregate local budget, one may wish to assign the factor "school-aged children" a weight of 0.43 in the expenditure needs formula.

It is, however, very common to observe differences in the costs of inputs across jurisdictions, as well as changes in production costs as the number of local public services is increased, specially due to economies of scale. In such cases, it would be desirable to identify the factors determining these cost differentials. These estimations can serve for developing a weighted factor formula or for adjusting the per client cost of local service delivery. Unfortunately, no data of cost difference are readily available in the Philippines.

Nevertheless, in those cases for which factors attempt to capture the costs of producing local services rather than number of consumers, the assignment of weights would require a somewhat different type of reasoning. In general, arriving at particular weight factors in a scientific objective way is a very difficult task. One possibility is to take actual expenditures by local government in a base year as a measure of their expenditure needs (the dependent variable), and

then to run a regression on those factors considered as relevant in determining cost differentials across jurisdictions.

In order to estimate an "expenditure need" equation we would need to redefine the variables in the same scale (a standard normal transformation could be a good alternative) and to force the intercept of the regression to be zero. Once all variables are defined in an identical scale, the coefficients of the regression would provide a measure of the relative effect that, in average, each factor has on the dependent variable. Of course, it is not guaranteed that the coefficients so obtained would add up to 1, and thus a correction should be made in order to achieve this condition. Another possibility would be to estimate the equation imposing that linear restriction on the estimated coefficients. At any rate, the estimated coefficient would then represent the weights by which the factors should enter in the index formula to approximate expenditure needs.

Appendix 2. Alternative Approaches to Measuring Expenditure Needs[31]

The expenditure needs of a jurisdiction may be defined as the funding necessary to cover all expenditure responsibilities assigned to the sub-national government at a standard level of service provision. In practice, there are several options to measure differences in expenditure needs across sub-national governments. In the following discussion we will describe six methodologies, which are presented in order of complexity from the simplest to the most complex one.

1. Lagged expenditure values

An uncomplicated way to define the expenditure needs of a locality is relying on historical expenditure patterns. Specifically, the available information on expenditure data of the last year(s) –adjusted by inflation– could be assumed to represent the expenditures needs for each jurisdiction. If local government have a great deal of discretion in deciding the amount spent during a period, this method offers a reasonably realistic estimation of expenditure needs, with important advantages like simplicity and minimum information requirements. Unfortunately,

[31] See Gomez et a. (2007) and Boex and Martinez-Vazquez (2007).

under discretion, and particularly if local governments have access to the financial markets, the use of historical data could also provide perverse incentives to the local authorities, because they will eventually "learn" that increasing expenditures in the present will result in higher equalization transfers in the future.

On the other hand, in the absence of discretion the actual expenditures of past periods could be determined by the particular financial constraints of the localities, which are imposed either by the central government or by the inability to raise revenues locally. In such rather common cases, the historical expenditure patterns would reflect undesired differences in revenue-rising ability instead of expenditure needs, and thus they should not be used to estimate the expenditure needs.

As a conclusion, to rely directly on lagged expenditure patterns is not a recommendable way to estimate expenditure needs under equalization transfer purposes.

2. Equal per capita expenditure norm

The simplest way to estimate the per capita expenditure needs is by taking the average of historical expenditures per capita at a national level. In order to compute this average, it is fist necessary to determine the aggregate level of sub-national expenditures needs (*SEN*), which can be based on adjusted historical data or on the budget forecast, and then to divide this amount by the national population. This simple procedure results advantageous when there is no detailed information about the differences in the per capita needs or cost of provision of local public services across jurisdictions or when there are reasons to believe that those differences are negligible.

The per capita expenditure need will constitute a national norm in this case, and in order to compute the expenditure needs for each locality it will only be necessary to multiply this norm by the local population:

$$EN_i = \frac{SEN}{P_N} \cdot P_i$$

Indeed, the local population is likely the most important variable determining the total expenditure needs and the cost of public service provision for a local government, because it directly provides an order of magnitude for the total amount of expenditures that must be incurred. Of course, economies of scale, economies of agglomeration, demographic characteristics of the population, geographical differences of jurisdictions and other factors can substantially modify the applicability of the national average for each and every jurisdiction. In that case, the national norm could eventually be adjusted by one or more indexes containing information about differences in relative needs or costs of provision. If the index is a good approximation to the relative needs and costs of local governments this would clearly be an improvement. In any case, it is always necessary to take into account the higher complexity that comes with the gain in accuracy.

3. Per client (top-down) financial expenditure norms

This methodology follows a similar structure than the "equal per capita expenditure norm" methodology, but improves the estimation of the expenditures needs by using more detailed information about the expenditure functions assigned to the local governments, and devising a local government functional allocation in a "top-down" manner. Its procedure can be summarized as follows:

Step 1: To determine the aggregate level of sub-national expenditures needs (*SEN*) and the aggregate level of expenditures needs per function *j* of sub-national governments (SEN_j).

As mentioned before, the *SEN* can be based on adjusted historical data or on the budget forecast. The same is true for functional expenditures needs, which must refer to the expenditure responsibilities assigned by law to the local governments. Alternatively, the functional budget forecast can incorporate adjustments responding to changes in expenditure priorities, but of course in the overall the adjustments must balance in order to fit the *SEN*.

Step 2: To compute the *per client expenditure norm* for each function *j*, dividing SEN_j by the number of clients or users that the function *j* has at a national level, C_j.

For instance, if we are referring the sub-national expenditures in secondary education, then the number of secondary students in the country will become the number of clients, and the norm will be obtained by dividing SEN_j by this number.

It is clear that this method requires the existence of demographic data for all jurisdictions, as well as a functional classification of expenditures that is not always available for sub-national governments. In this context, some gains in feasibility can be obtained by simplifying the procedure; either considering only the most important sub-national functions, or grouping the functions that have the same type of clients. For instance, if the administrative costs cannot be assigned to specific functions, and there are also some rather unimportant functions classified as "other expenditures," then it will be convenient to add them up and divide the result by the population, which in these particular cases would represent a good proxy of the number of clients.

Given a certain number of clients, once the funding envelope for any category has been determined then, the per client norm has been implicitly defined. Accordingly, the amount of money per capita or per client in the norm can be decided in an ad hoc manner by line ministries or even stated in the law for several years or changed every year. However, the problem with this approach is that either the norms may not be affordable or may be too little; thus, in order to ensure the feasibility of the norms, the best practice within this approach is to first subdivide from the top (according to the expenditure priorities of the central authorities) the available funding envelope for local governments in all the expenditure functions or categories, as recommended in the "first step."

Step 3: To compute the *per capita equivalent need* of all per client functional norms (determined in the second step) *for all jurisdictions*.

This step is necessary because the formula of fiscal disparities is defined at a jurisdictional level and expressed in per capita units, and so all the elements to be incorporated must be defined in identical terms. The computation consists in multiplying the per client functional norm defined at

the national level (SEN_j / C_j) by the ratio between the number of clients of that function in each locality and its population ($C_{j\,i} / P_i$). The reasoning involved is very simple: If, for instance, in certain jurisdiction with a population of 9 inhabitants the number of clients of the function *j* is 3 (so the clients correspond to one third of the population), then a per client need of, let say L$6 million, is perfectly equivalent to a per capita need of L$2 million (one third of the per client need) within the jurisdiction.

Either in the step 2 or 3, the per capita equivalent need of each category of expenditures can be adjusted upwards or downwards in order to reflect differences in the costs of provision across jurisdictions. Again, this must be done in such a way that the overall budget affordability of the norm is not affected.

Step 4: To compute the *per capita expenditure need* of each jurisdiction *j* by adding up its per capita equivalent needs for all categories.

If we are considering three functional categories of expenditures (j = 1, 2 or 3), once the SEN_j has been determined as in the first step of the procedure, the three remaining steps can be summarized in the following expression:

$$EN_i = \frac{SEN_1}{C_1} \cdot \frac{C_{1i}}{P_i} + \frac{SEN_2}{C_2} \cdot \frac{C_{2i}}{P_i} + \frac{SEN_3}{C_3} \cdot \frac{C_{3i}}{P_i}$$

Due to several positive features, this methodology constitutes a very attractive alternative for the design of an intergovernmental transfer system. Because of its structure, the per client financial expenditure norms' methodology is able to define *feasible* national norms that are also *flexible* enough to be adjusted in response to changes in national public policy, to consider differences in cost provision across jurisdictions, and also to adapt to limited available information. Additionally, the estimation of expenditures needs is explicitly *linked with the functions of the sub-national governments*, which is the correct approach to measuring expenditures needs. Finally, its *simplicity* contributes to the *transparency* of the system and the predictability of the amount of transfers to be received by the local governments.

The main drawback of the methodology is its dependence on the selected expenditure norms. A careful and rational determination of the national expenditures norms (or the available funding envelope for each category) is in this case crucial for the success of the intergovernmental transfer system, because deviations from the actual expenditure needs can importantly affect its equalizing effects. In this regard, the historical averages of per client expenditures by function can provide a natural reference of magnitude, and each expenditure norm can be adjusted upwards or downwards with caution, considering both the national priorities and the effects on the available funding envelope, such that the remaining functional norms do not result underestimated or overestimated.

4. Weighted indexes of expenditure needs

This is perhaps the most commonly used approach for estimating expenditure needs.[32] It roughly consists in creating a composite index of expenditure needs, which captures and weights the factors determining the cost differences in delivering a standard package of local government services across jurisdictions. Such factors include demographic variables reflecting, for example, the special needs of the young and the elderly, other factors such as the level of poverty and unemployment, and differences in the price level or cost of living. The list of criteria entering the index and the weight used need to be carefully assessed and also thoroughly discussed with all stakeholders to ensure that the main causes for substantial differences in the costs of public service delivery across jurisdictions are captured in the index.

The methodology for computing the weighted index and the per capita expenditure needs is conceptually simple, but it requires several steps that are better explained sequentially:

Step 1: To determine the aggregate level of sub-national expenditures needs (*SEN*.)

Step 2: To select the variables or factors explaining the cost differences in delivering a standard package of local government services.

[32] This approach is implicitly applied when a weighted-factor mechanism is used for allocating equalization grants. In this case, however, we clearly restrict its usage to estimating expenditure needs, while in practice the weighted-factor formulas are usually not very transparent in separating expenditure needs from fiscal capacity.

Step 3: To compute the indexes representing the relative expenditure need of each and every jurisdiction, for each and every selected variable:

$$r_i^k = F_i^k / \sum_{i=1}^{n} F_i^k ,$$

where F_i^k is the value of the variable *k* for the jurisdiction *i*, *n* the number of jurisdictions, and thus r_i^k the index of relative expenditure need of jurisdiction *i* according to the values of the variable *k*.

Step 4: To establish the weights or the relative importance of the selected factors in the determination of expenditure needs, a^k, which are identical for all jurisdictions, such that:

$\sum_{k=1}^{m} a^k = 1$, where *m* is the number of factors.

Step 5: To compute the composite index of expenditure needs for all jurisdictions *i* (IEN_i):

$$IEN_i = \sum_{k=1}^{m} a^k \cdot r_i^k .$$

Step 6: To compute the expenditure needs for all jurisdictions *i*:

$$EN_i = IEN_i \cdot SEN .$$

The effectiveness of this methodology in estimating expenditure needs depends critically on the choice of the factors and their weights. Objective choices of factors and weights capturing the variation in expenditure needs can be made by using simple statistical techniques. The factors are those explaining the differences in expenditure needs and the weights represent the relative contribution of each factor to the overall measure of need. In practice, however, the data required to objectively select the factors and estimate their proper weights is not always available, and these decisions, clearly subject to political pressure, are made in an arbitrary and obscure manner.

Local government officials and parliamentarians have incentives to fight for the inclusion of those factors that favor their own constituencies, or for weighting them more heavily, so if the analysis is not based on objective information, the political process can easily result in a formula that do not estimate expenditures needs properly. There also exist a tendency for policy makers to "over-design" the measure of expenditure needs by including too many factors, adding complexity and reducing transparency in the allocation scheme. In reality, the inclusion of more factors does not necessarily represent a gain in accuracy, because they are usually correlated and thus no new information is effectively added.

Therefore, a balance has to be struck between simplicity and transparency, and it is necessary to find factors that equitably reflect the true fiscal need of local governments. Variables used as factors should more accurately reflect needs, come from an independent source, and be free of manipulation by either central government or sub-national governments.

5. Traditional (bottom-up) physical expenditure norms

Expenditure needs can also be measured in a bottom-up manner, by exhaustively costing a standardized basket of local government services. In addition to the determination of standard levels of public services (national averages or minimum requirements), this approach requires a detailed quantification of the inputs, information about their cost or prices, a description of the production process for all local public goods and services, and very explicit procedures for how to cost all aspects of the expenditure responsibilities of sub-national governments. The expenditure needs for each local government are obtained by simply adding up all the costs of delivering the targeted standards associated with the sub-national services within the jurisdiction.

Although intuitively appealing, the traditional approach is usually unrealistic due to the impossibility of gathering all the information it requires. Collecting and managing all the information could be very demanding in terms of effort and extremely expensive. Finally, this approach may also be impractical because it can lead to unaffordable estimations of expenditure needs, forcing to adjust downwards the computed expenditure needs.

These important drawbacks explain why the international practice has consistently moved toward alternative approaches in expenditure needs' estimation during the last decades.[33] In particular, the "top-down" approach already explained can be regarded as the most adequate and suitable whenever the information available at the sub-national level is limited; while other statistically based approaches can provide "ideal" estimations of local expenditure needs when the data is detailed and abundant enough to do so. One example of the latter approach is the Representative Expenditure System, methodology that will be explained in the following point.

6. Regression-based representative expenditure system (RES)

Among the methodologies presented here for measuring expenditure needs, this is the most sophisticated and conceptually complex one. It is data intensive, and thus not suitable to be applied in all countries, but it offers a very good estimation of expenditure needs and so it is worth it to be explained briefly.

Step 1: To select, among the expenditures responsibilities of sub-national governments, those functions or categories that will be subject to equalization.

Step 2: To identify the main factors, other than the prices of inputs, determining the cost of providing local services for each of the selected functions. This can be done through a regression analyses in which the explained or dependent variables are the actual expenditures incurred in each functions and the explanatory or independent variables are those that would explain the differences in the cost of providing public services across jurisdictions. The relevant factors will be those that are statistically significant and have a relevant impact in the costs of public service provision.

Step 3: To compute the per capita representative expenditures for each function and each locality by using the coefficients obtained in step 2. The representative expenditures can be interpreted as the amount of money that a local government would have spent in some category if it had provided the standard level of service.

[33] Only few countries, most of them developed, have the capacity to deal adequately with highly detailed expenditure norms. Examples of countries currently using this "bottom-up" approach are Denmark, the Netherlands and Japan.

Step 4: To adjust the per capita representative expenditures by considering the input prices.

Step 5: To sum the adjusted per capita representative expenditures of all categories to arrive to the total per capita representative expenditures.

The representative revenue system is technically considered as the best approach to estimate expenditure needs, so it can be recommended whenever its application is feasible. However, the procedure is data intensive and it is usually not possible, or too expensive, to collect the all detailed information required for the proper use of this model.

Appendix 3. Alternative Approaches to Measuring Fiscal Capacity[34]

Fiscal capacity of a sub-national government may be defined as the potential revenues that can be obtained from the tax bases assigned to the sub-national government if an average level of effort (by national standards) is applied to those tax bases. Thus, ideally, the measure of fiscal capacity should consider either the size of the tax bases available to sub-national governments or the revenue that these tax bases would yield under standard tax rates.

A variety of methods are used around the world to measure local government's fiscal capacity, four of which are going to be presented here.

1. Lagged own revenue collections

The lagged or historical level of revenue collections constitutes a very simple way to define the fiscal capacity of the jurisdictions. Unfortunately, using past collections does not satisfactorily address the problem of negative incentives, because sub-national governments can easily "learn" that higher collections translate into lower transfers and consequently reduce their tax effort in order to take advantage of the transfer system.

[34] See again Gomez et a. (2007) and Boex and Martinez-Vazquez (2007).

Another important problem with this approach is the existence of a difference or gap (sometimes large) between actual and potential collections in any jurisdiction, as well as the fact that the size of these gaps also vary across jurisdictions. There are several causes for these gaps to arise. One cause could be some differences on the tax structure or in the definition of the tax base across jurisdictions. For instance, they could compute the taxable income in a different way or have dissimilar criteria for tax exemptions. In both cases, the tax collection will likely differ between similar jurisdictions, even in the case where their fiscal capacity is identical. Similarly, tax avoidance and tax evasion might affect some local governments more than others, and the ability to overcome these problems, including the costs that must be assumed in order to improve the compliance rates, may also vary across jurisdictions.

In general, using the actual amount of revenue collections in a jurisdiction as a measure of fiscal capacity should be avoided if local authorities can control tax rates, tax base, or administrative enforcement effort. In such a case, some local governments would be able to reduce the actual collections (in exchange, for example, of political benefits) and benefit in an undesirable way from the equalization transfer system. This kind of practices could seriously damage the equalizing effects of the program.

Due to these complications, and the similar shortcomings presented by the lagged expenditure values in estimating expenditure needs, the direct application of historical data in estimating the fiscal disparities should in general be avoided. As an alternative, the same as in the case of expenditure needs' estimation, simple manipulation of the available historical data can serve to reduce the problems related with perverse incentives and the differences between actual collections and "true" fiscal capacity. The following methodology is an example of this strategy.

2. Average of past collection ratios

In order to reduce the problems related with the use of lagged own revenue collections in estimating fiscal capacity, some slight manipulations of historical collection can provide effective and straightforward solutions.

The present methodology roughly consists in computing the ratio between local per capita revenues and the per capita revenues at the national level for several years, and then to obtain an average of these ratios for each jurisdiction, which indicates the relative size of local per capita collections with respect to the national standard in a period of several years. Thus, a single estimator of relative fiscal capacity is obtained for each jurisdiction and considering only historical collection data. As we will explain, there are important potential advantages in using historical data in this rather indirect way. The complete procedure can be summarized in the following six steps:

Step 1: To select, among all sources of revenues, those that can be used to represent the fiscal capacity of local governments.

If fiscal capacity is understood as the revenues that a local government would rise by applying standard tax rates to their tax bases, then it is natural to consider the own taxes applied by the local government within its jurisdiction as the most important source of revenues. However, since what matters is to measure the ability of local government to cover its expenditure needs, it is also necessary to include those received as revenue sharing from the central government and all intergovernmental transfers exempting only equalization transfers. Again, in order to avoid undesirable manipulation, it is desirable that no discretion is allowed by central or local government officials in the determination of the tax rates or the composition of the tax base on these sources of revenue.

Step 2: To define the historical periods that can serve better as a reference for estimating future fiscal capacity.

The more the periods considered, the lower the possibility of undesirable manipulation of the index created for estimating future fiscal capacity. However, the use of very old collection data can be misleading if many changes have taken place in the collection patterns of local governments during the last years. For these reasons, periods of three, four or five years, depending on data availability and current relevancy of the information, could be a plausible choice.

Step 3: To compute the per capita revenue for each jurisdiction *i* and for each period *t* (R_{jt}), as well as the per capita revenue at a national level for every year (R_{Nt}).

Defining P_{it} and P_{Nt} as the population in jurisdiction *i* and the national population in period *t*, respectively, then the per capita revenues for each revenue source *j*, jurisdiction *i* and period *t* are defined as

$$R_{ijt} = \frac{revenues\ for\ i,\ from\ source\ j_t}{P_{it}} \quad \text{, and} \quad R_{Njt} = \frac{total\ revenues,\ source\ j_t}{P_{Nt}}.$$

Furthermore, the total per capita revenues at jurisdictional and national level in each period are given by $R_{it} = \sum_j R_{ijt}$ and $R_{Nt} = \sum_j R_{Njt}$, respectively.

Step 4: To compute the relative collection ratios, for every jurisdiction *i* and period *t* (RCR_{it}), which are obtained for every year by dividing the per capita revenues of jurisdiction *i* by the national per capita revenues: $RCR_{it} = R_{it} / R_{Nt}$.

The relative collection ratios can be lower, equal or higher than one, meaning that the jurisdiction have collected less, the same or more per capita revenues than the country as a whole during a certain year.

Step 5: To compute the index of relative collection for each jurisdiction (IRC_i), as the average of all relative collection ratios of the jurisdiction. Defining *T* as the number of periods selected for the estimation, then $IRC_i = \sum_t RCR_{it} / T$.

The index of relative collection has exactly the same interpretation than the relative collection ratios, but it refers to a longer period of time. This last characteristic helps to moderate the perverse incentives associated with the benefits of reducing tax collections, because now, if a local government wants to increase the amount of future transfers, it must modify a multi-year average instead of a single-year result. Indeed, the expected benefits of reducing the local tax collections are decreased in proportion to the number of periods used in the computation of the

average, and so the perverse incentives are directly reduced as well. Additionally, if the local government officials are not sure whether they will remain in their positions during the following years or not, then the idea of beneficiating competing political parties in the future can also discourage that behavior. If present, this "democratic factor" could eventually increase the effectiveness of this methodology.

Step 6: To estimate the per capita fiscal capacity for all jurisdictions as:

$$FC_i = IRC_i \cdot \textit{ aggregate revenue forecast}$$

This estimation of fiscal capacity can be interpreted as the fiscal capacity that the local government *i* would have in the forecasted period if the average tax collection at the local and national level remain unchanged and the macroeconomic expectations are fulfilled.

3. Basic proxies for the local ability to tax

A different approach to estimating the fiscal capacity of sub-national governments is by considering *proxies*, or variables that in theory should be highly correlated with their ability to collect revenues. A widely used variable is the per capita level of personal income, which tends to be a good proxy and is usually available. Another commonly used variable is the gross regional product (GRP), which is the sub-national equivalent of Gross Domestic Product (GDP) and can also serve as a proxy of fiscal capacity. GRP is actually a more comprehensive measure of fiscal capacity than per capita income because it includes all the income generated within a region, personal and corporate, irrespective of the location of residence of the worker or producer.

In order to improve the estimation of fiscal capacity, it is also possible to exclude from the GRP certain items such as central taxes and transfers, which are not part of the potential tax base. The resulting modified version of the GRP is referred as *Total Taxable Resources* (TTR), and it constitutes a very good estimator of fiscal capacity.

4. Representative Revenue System (RRS)

The basic idea underlying the RRS is to calculate the amount of revenue that a region would collect if it were to exert average fiscal effort. This is done by collecting data on revenue collections and tax bases for each tax under consideration and for every sub-national region. Based upon information on all tax bases for every region as well as the national average fiscal effort for each of the taxes, one can compute the amount of revenues that each jurisdiction would collect under average fiscal effort. This amount is then considered to quantify the fiscal capacity of each jurisdiction.

The RRS is a thorough and complete method to accurately measure the fiscal capacity of a region. It is based on disaggregated data and a detailed knowledge of (proxies for) the statutory tax bases, taking into account variations in effective tax rates among various tax components and non-tax revenue sources. As a result, fiscal capacity as measured by the RRS can be considered as an accurate representation of a region's true fiscal capacity. However, due to the disaggregated nature of the information, the measure is data-intensive and is not always possible to use it.

Appendix 4. Computation of per capita FEEP transfers by adjusted weighted index formula in the IRA for provinces

Region	province	Population 2008	Land Area 2008	Young Population	Old Population	Poverty Population	Fiscal Capacity	Proportion of Population	Proportion of land area	Proportion of Young Population	Proportion of Old Population	Proportion of poverty population	Relative fiscal capacity	Weighted Index (%)	FEEP transfer per capita in PhP
		(1)	(2)	(3)	(4)	(5)	(6)[a]	(7)= (1)/sum(1)	(8)= (2)/sum(2)	(9) = (3)/sum(3)	(10) = (4)/sum(4)	(11) = (5)/sum(5)	(12)[b]	(13)[c]	(14)[d]
Region I	Ilocos Norte	547284	3504.3	54789	39055	11923	1178.15	0.0080	0.0108	0.0065	0.0129	0.0032	0.0127	0.0093	261.41
Region I	Ilocos Sur	633138	2595.96	65759	45106	17238	989.65	0.0092	0.0080	0.0078	0.0149	0.0046	0.0130	0.0100	242.71
Region I	La Union	720972	1503.75	75822	42327	35618	818.88	0.0105	0.0046	0.0090	0.0140	0.0094	0.0132	0.0107	227.66
Region I	Pangasinan	2.65E+06	5451.01	307465	138257	114400	632.97	0.0386	0.0167	0.0364	0.0456	0.0303	0.0134	0.0298	172.97
…															
CAR	Abra	230953	4198.2	26739	15529	15182	2438.18	0.0034	0.0129	0.0032	0.0051	0.0040	0.0111	0.0065	431.31
CAR	Apayao	103633	4351.23	12865	4663	8463	3853.51	0.0015	0.0134	0.0015	0.0015	0.0022	0.0093	0.0047	700.67
CAR	Benguet	372533	2769.08	41508	14639	5992	1909.24	0.0054	0.0085	0.0049	0.0048	0.0016	0.0118	0.0068	282.04
CAR	Ifugao	180815	2628.21	21008	8012	7716	2195.43	0.0026	0.0081	0.0025	0.0026	0.0020	0.0114	0.0053	451.08
CAR	Kalinga	182326	3231.25	22948	8092	7314	2066.59	0.0027	0.0099	0.0027	0.0027	0.0019	0.0116	0.0056	468.36
CAR	Mt. Province	148661	2157.38	18489	9467	10280	2325.84	0.0022	0.0066	0.0022	0.0031	0.0027	0.0113	0.0050	521.29

Source: Own calculation.

a: Fiscal capacity is computed by the average of past collection ratios method (FC1).

b: (12)=[max(12)-(12)]/{N*[max(12)-average(12)]}, where N is the number of provinces.

b:(13)=0.35*(7)+0.1*(8) +0.1*(9)+ 0.1*(10) +0.1*(11) +0.25*(12).

c: (14)=[(13)*total available FEEP for provinces]/(1).

Appendix 5. Computation of per capita expenditure needs by expenditure norms (EN1) for provinces

		Number of clients						Equivalent per capita need									EN1
Region	Province	Total population: general public service; economic services; debt servicing ; other purposes	Population between 4-65 years: Education, culture and sport	A weighted population: health, nutrition and population control	Population between 18-65 years: labor and employment	Poverty population: Housing and community development	Population over 65 years: Social security and welfare	General public services	Education, culture and sports	Health, nutrition and population control	Labor and employment	Housing and community development	Social security/social service and welfare	Economic services	Debt servicing	Other purposes	
Aggregate expenditure (Million)								20953.9	2315.6	9033.9	30.2	827.7	973	9900.8	1594.4	10519.2	(7)++…+(15)
Aggregate clients (Thousands)								686071	575242.4	206819.9	360508.3	37812.1	30308.2	686071	686071	686071	
Expenditure norm								305.4	40.3	436.8	0.8	218.9	321.0	144.3	23.2	153.3	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)…(15)=expenditure norm * number of clients/total population									
Region I	Ilocos Norte	547284	452289	165533	310260	11923	39055	305.42	33.27	132.12	0.47	4.77	22.91	144.31	23.24	153.32	819.83
Region I	Ilocos Sur	633138	520984	192889	350452	17238	45106	305.42	33.12	133.07	0.46	5.96	22.87	144.31	23.24	153.32	821.78
Region I	La Union	720972	601508	214821	400487	35618	42327	305.42	33.58	130.15	0.46	10.81	18.85	144.31	23.24	153.32	820.15
Region I	Pangasinan	2.60E+06	2196819	795941	1395381	114400	138257	305.42	33.43	131.42	0.44	9.47	16.78	144.31	23.24	153.32	817.83
…																	
CAR	Abra	230953	188026	71420	121812	15182	15529	305.42	32.77	135.08	0.44	14.39	21.59	144.31	23.24	153.32	830.56
CAR	Apayao	103633	86037	31230	54473	8463	4663	305.42	33.42	131.63	0.44	17.88	14.44	144.31	23.24	153.32	824.10
CAR	Benguet	372533	314799	107877	206660	5992	14639	305.42	34.02	126.49	0.46	3.52	12.62	144.31	23.24	153.32	803.40
CAR	Ifugao	180815	151577	53531	94155	7716	8012	305.42	33.74	129.32	0.44	9.34	14.22	144.31	23.24	153.32	813.36
CAR	Kalinga	182326	151058	55044	92441	7314	8092	305.42	33.35	131.87	0.42	8.78	14.25	144.31	23.24	153.32	814.96
CAR	Mt. Province	148661	120283	46421	73366	10280	9467	305.42	32.57	136.40	0.41	15.14	20.44	144.31	23.24	153.32	831.25

Source: Own calculation.

Appendix 6: Computation of per capita expenditure needs by weighted index formula (EN2) for provinces

Region	province	Population 2008	Land Area 2008	Young Population	Old Population	Poverty Population	Proportion of Population	Proportion of land area	Proportion of Young Population	Proportion of Old Population	Proportion of poverty population	Weighted Index (%)	EN2
		(1)	(2)	(3)	(4)	(5)	(6)= (1)/sum(1)	(7)= (2)/sum(2)	(8) = (3)/sum(3)	(9) = (4)/sum(4)	(10) = (5)/sum(5)	(11)[a]	(12)[b]
Region I	Ilocos Norte	547284	3504.3	54789	39055	11923	0.0080	0.0108	0.0065	0.0129	0.0032	0.0082	839.77
Region I	Ilocos Sur	633138	2595.96	65759	45106	17238	0.0092	0.0080	0.0078	0.0149	0.0046	0.0090	795.71
Region I	La Union	720972	1503.75	75822	42327	35618	0.0105	0.0046	0.0090	0.0140	0.0094	0.0098	759.45
Region I	Pangasinan	2.60E+06	5451.01	307465	138257	114400	0.0386	0.0167	0.0364	0.0456	0.0303	0.0348	738.21
…													
CAR	Abra	230953	4198.2	26739	15529	15182	0.0034	0.0129	0.0032	0.0051	0.0040	0.0051	1246.52
CAR	Apayao	103633	4351.23	12865	4663	8463	0.0015	0.0134	0.0015	0.0015	0.0022	0.0034	1844.61
CAR	Benguet	372533	2769.08	41508	14639	5992	0.0054	0.0085	0.0049	0.0048	0.0016	0.0051	775.90
CAR	Ifugao	180815	2628.21	21008	8012	7716	0.0026	0.0081	0.0025	0.0026	0.0020	0.0033	1037.59
CAR	Kalinga	182326	3231.25	22948	8092	7314	0.0027	0.0099	0.0027	0.0027	0.0019	0.0037	1124.21
CAR	Mt. Province	148661	2157.38	18489	9467	10280	0.0022	0.0066	0.0022	0.0031	0.0027	0.0031	1157.96

Source: Own calculation.

a: (11)=0.4*(6)+0.15*(7) +0.15*(8)+ 0.15*(9) +0.15*(10) .

b: (12)=[(11)*Aggregate expenditure needs for provinces]/(1).

Appendix 7: Computation of per capita fiscal capacity according to the average of past collection ratios (FC1) for provinces

Region	Province	Own revenues 2006	2007	2008	Total population	Relative fiscal capacity (three years average)	Estimated own revenues	Other revenues[a]	FC1
		(1)	(2)	(3)	(4)	(5)= [(1)/sum(1)+(2)/sum(2)+(3)/sum(3)]/3	(6)=(5)* Aggregate forecast of total collection	(7)	[(6)+(7)]/(4)
Region I	Ilocos Norte	77356752	108695952	92351480	547284	0.0107	1.05E+08	539783808	1178.15
Region I	Ilocos Sur	20831182	41236792	53646624	633138	0.0043	42399980	584188032	989.65
Region I	La Union	61574848	61154420	70983048	720972	0.0074	73129216	517261952	818.88
Region I	Pangasinan	196064336	277683264	227151808	2645395	0.0269	2.65E+08	1409807616	632.97
…									
CAR	Abra	23107566	27399410	26263748	230953	0.0030	29004076	534100864	2438.18
CAR	Apayao	2268535.5	2356469.25	5290131.5	103633	0.0004	3625051	395726048	3853.51
CAR	Benguet	147329360	171195008	205977840	372533	0.0200	1.96E+08	514814784	1909.24
CAR	Ifugao	16102927	46683580	87096672	180815	0.0055	53592896	343372960	2195.43
CAR	Kalinga	15263204	17097756	17325910	182326	0.0019	18771798	358020480	2066.59
CAR	Mt. Province	23072496	26786104	31963782	148661	0.0031	30656818	315104256	2325.84

a: other revenues include share from national tax collection, extraordinary receipts aids, loans and borrowings, and inter-local transfers in the fiscal year of 2008.

Appendix 8: Computation of relative fiscal gap for provinces (taking fiscal capacity measure 1 as an example)

Region	Province	Per capita expenditure needs by Expenditure norms (EN1)	Per capita fiscal capacity by the average of past collection ratios (FC1)	Fiscal gap measure 1	Relative fiscal gap measure1
		(1)	(2)	(3)=(1)-(2)	(4)=(3)/sum(3)
Region I	Ilocos Norte	819.83	1178.15	-358.33	0.01112
Region I	Ilocos Sur	821.78	989.65	-167.87	0.00521
Region I	La Union	820.15	818.88	1.27	-0.00004
Region I	Pangasinan	817.83	632.97	184.86	-0.00574
…					
CAR	Abra	830.56	2438.18	-1607.62	0.04989
CAR	Apayao	824.10	3853.51	-3029.41	0.09401
CAR	Benguet	803.40	1909.24	-1105.85	0.03432
CAR	Ifugao	813.36	2195.43	-1382.07	0.04289
CAR	Kalinga	814.96	2066.59	-1251.62	0.03884
CAR	Mt. Province	831.25	2325.84	-1494.58	0.04638

Source: Own calculation